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HAEMATEMESIS AND MELAENA*

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During the last few years there has been much controversy over the treatment of bleeding from the stomach and duodenum. Should we operate and, if so, what operation should we do? Should we transfuse? Is morphine harmful? Should we feed or starve the patient? Should we give alkalis? Does any treatment at all favourably influence the mortality? What is the mortality? On none of these points is there general agreement, and the mass statistics which have been quoted have done little to clarify the issue.

One is reminded of those barbarian hosts, numerous but inchoate, which again and again throughout history have been routed by the discipline of a few. Though small in number, the results of a single physician, surgeon, or team who is actively interested in the disease and gives the patients individual attention and supervision are more valuable than a large assortment of cases, collected from different wards, or indeed different hospitals, and treated with very variable degrees of thoroughness.

No well-informed person would try to assess the prognosis and treatment of diabetes mellitus or pernicious anaemia from mass hospital statistics. He knows that they inadequately reflect the benefits conferred by insulin and liver extract. For accurate information about these diseases he goes to the records of individual physicians such as Joslin or Wilkinson, so that he can be sure that the patients have received the appropriate treatment for their disease. In the same way, when discussing haematemesis and melaena we should quote the best individual results of treatment, such as those of Finsterer (1936) and Meulengracht (1936), though we must at the same time decide whether these results are capable of general attainment. There is still need, then, for data about the prognosis of gastro-duodenal haemorrhage which bear the stamp of individual interest and treatment.

A Fatal Case

My own observations are based on a series of twenty-seven cases, which includes every patient with the presenting symptom of haematemesis, melaena, or consequent acute anaemia, whatever the cause of the gastro-duodenal bleeding, who has been admitted to the Medical Unit at St. Bartholomew's Hospital in the two years during which I have been in charge. For the intensive investigation of these patients I am indebted to my colleague Dr. F. Avery Jones. I shall have many occasions to refer to the analysis by Cullinan and Price (1932) of the 105 cases of severe haemorrhage from peptic ulcer, which were admitted to the medical wards of St. Bartholomew's Hospital between the years 1925 and 1929, an important paper which has not received the attention it deserves. I have been interested in gastro-intestinal diseases for a number of years, but my attention was focused on the problem of alimentary bleeding by the death of one of the first patients with haematemesis whom I treated in my new wards.

A railway porter, who had been treated for syphilis of the liver in 1923, at the age of 44, came under treatment for a chronic duodenal ulcer in 1933, when he was 54. He remained at work, with occasional spells off duty because of pain, until January 22, 1935, when he had three melaena stools, felt faint, and went to bed. On January 23, 1935, he vomited a pint of blood and had another melaena stool. He was admitted to my ward on this day. He was well preserved for his age, which was now 56, but was cold and sweating. Only sips of water were given in the first twenty-four hours, the intention being to follow the Lenhartz ladder diet.

On January 26 he had melaena again, his pulse rose from 80 to 130, and he was given a transfusion of 300 c.cm. of blood and a saline drip per rectum. He returned to the bottom rung of the Lenhartz ladder, but on February 7, after an enema, his haemoglobin count fell sharply from 50 to 38 per cent., and a transfusion of 400 c.cm. of blood was given. He remained on the eighth rung of the Lenhartz diet, and on February 11, since his stools were still dark and sticky and his haemoglobin only 44 per cent., a third transfusion of 400 c.cm. was given. He kept well and his pulse stayed about 70 till February 18, when he again had haematemesis and melaena. Two litres of blood were transfused during the next thirty hours. On February 20 he had melaena once more, and his blood pressure fell to 70/30. He received 600 c.cm. of blood on February 21, and on February 22 laparotomy was performed, a further 800 c.cm. of blood being given at the same time. An ulcer was found in the second part of the duodenum, which penetrated deep into the pancreas and which could not have been removed without great difficulty. The duodenum was divided through its first portion and a partial gastrectomy was performed. A blood transfusion of 500 c.cm. was given on February 23, but the patient died from pneumonia on February 24.

Necropsy showed that there was a large diverticulum just below the junction of the first and second parts of the duodenum on the medial wall. The mouth was about 1¼ inches in diameter; the diverticulum passed into the head of the pancreas. Nearly the whole of the interior of the diverticulum was ulcerated, but no large vessel had been eroded. The stump of the duodenum showed no evidence of covering of the sutures, and all the tissues in this region and around the head of the pancreas were sodden and oedematous. The stomach was grossly distended with offensive dark faeculent fluid, and the whole duodenum and the proximal loop of the anastomosis were similarly distended. The distal loop and the jejunum for about two feet below were collapsed, but the whole of the gut below was greatly distended. The obstruction at the site of the anastomosis appeared to be due to the distended colon lifting forwards the stomach and the region of the anastomosis.

This tragedy caused me a good deal of heart-searching. The duodenal lesion was of such a nature as to demand

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an extensive operation which a patient in a weak state could not be expected to stand. The patient received large amounts of blood before and during his operation, and I did not think the failure could be attributed to inadequate transfusion. We have learnt to associate failure of reaction at the peritoneal suture line and post-operative distension of the stomach and bowel with inanition and avitaminosis (Archer and Graham, 1936). I felt dissatisfied with the orthodox treatment of alimentary haemorrhage by starvation, with operation on patients who seemed unlikely to benefit from medical treatment. Had I known the task I was setting the surgeon I should not have asked him to operate, and my first question was to decide in what circumstances I should advise operation in the future.

Difficulty of Diagnosis of Source of Bleeding

The *Lancet*, in an annotation on December 12, 1936, stated that in view of the improved results obtained by the combination of operation with massive transfusion it had become "more urgent than ever for the physician to learn to recognize the patients who, if they are medically treated, are likely to die." Denys Jennings (1936) suggests that there are two types of gastro-duodenal haemorrhage: erosive haemorrhagic gastritis, in which the mortality is negligible; and chronic ulcer, in which the mortality is high. Much as I should like to examine by gastroscopy patients who are bleeding from the stomach and duodenum, I do not think it would be good medicine, and I know no other way in which the differential diagnosis between erosion and chronic ulcer can be made.

The previous history is of little value. Schindler (1937), the pioneer of gastroscopy, writes:

"The average duration of symptoms in our cases of gastritis was five and one-half years. . . . The distress was usually epigastric; in the superficial and hypertrophic form it was usually delayed. . . . Periodicity seem to be present in some cases of hypertrophic gastritis. . . . Alkali gave relief in about half the cases. . . . Gross, sometimes fatal, haemorrhages from gastritis have occurred."

Seven of my twenty-seven patients had a long history of dyspepsia suggestive of chronic ulcer, but when they were radiographed, as soon as possible after bleeding, no ulcer was seen; in two of them healing acute ulcers were seen through the gastroscope. Nor can acute and chronic ulcers be distinguished by the amount of blood lost, for the haemorrhage from acute ulcers may be severe, repeated, and fatal. It is impossible by clinical methods to decide whether the patient is bleeding from an acute or chronic ulcer.

In Table I I have noted the duration of dyspepsia before the haematemesis, the provisional diagnosis made

TABLE I.—*Consecutive Series of Twenty-seven Cases of Haematemesis and Melaena*

No.	Sex	Age	Duration of Dyspepsia	Diagnosis		Minimum Hb	Maximum Urea (mg. per cent.)	Recurrences	Transfusion (c.c.m.)	Severity	Treatment
				Provisional	Final						
				Cases Recovering:							
1	Male	58	3 weeks	Acute ulcer	Hepatic cirrhosis	51	54	0	0	Mild	M.
2	,,	56	9 months	Chronic ulcer	Chronic gastritis with acute ulcer	35	32	0	0	Moderate	M.
3	,,	47	0	Acute ulcer	Acute ulcer	86	52	0	0	Mild	M.
4	,,	40	6 years	Chronic ulcer	Acute ulcer	50	31	1	0	Moderate	M.
5	,,	29	15 ,,	Gastro-jejunal ulcer	Gastro-jejunal ulcer	61	26	1	0	Mild	M.
6	,,	59	14 ,,	Chronic duodenal ulcer	Chronic duodenal ulcer	67	64	0	0	,,	M.
7	,,	64	5 ,,	Chronic ulcer	Acute ulcer	97	30	0	0	,,	M.
8	,,	58	30 ,,	Chronic duodenal ulcer	Chronic duodenal ulcer	60	60	0	0	Moderate	M.
9	,,	48	2 ,,	Chronic ulcer	Chronic gastritis with acute ulcer	33	78	4	600	Severe	M.
10	,,	51	1½ ,,	Chronic ulcer	Chronic duodenal ulcer	33	96	3	600	,,	M.
11	,,	39	5 ,,	Chronic ulcer	Acute ulcer	41	86	0	600	Moderate	M.
12	,,	48	0	Acute ulcer	Acute ulcer	50	116	2	2,810	Severe	M.
13	,,	36	0	Acute ulcer	Chronic gastritis	59	76	0	0	Moderate	M.
14	,,	44	15 years	Chronic duodenal ulcer	Chronic gastric ulcer	113	38	0	0	Mild	M.
15	,,	44	4½ ,,	Chronic gastric ulcer	Chronic gastric ulcer	123	70	0	0	,,	M.
16	,,	49	1½ ,,	Chronic duodenal ulcer	Chronic duodenal ulcer	33	142	2	0	Severe	M.
17	,,	61	10 ,,	Chronic gastritis	Chronic gastritis	26	132	3	2,200	,,	M.
18	,,	51	4 ,,	Chronic gastritis	Chronic gastritis	48	72	0	0	Moderate	M.
19	,,	44	13 ,,	Gastro-jejunal ulcer	Gastro-jejunal ulcer	51	60	0	0	,,	M.
20	Female	48	6 months	Chronic ulcer	Chronic duodenal ulcer	84	—	0	0	,,	L.
21	,,	61	5 weeks	Gastric ulcer	Acute ulcer	54	78	2	0	,,	M.
22	,,	69	0	Acute ulcer	Cirrhosis hepatis	75	60	2	0	,,	M.
23	,,	62	4 years	Chronic gastric ulcer	Chronic gastritis	78	45	0	0	Mild	M.
24	,,	47	14 days	Acute ulcer	Acute ulcer	39	78	0	0	Moderate	M.
25	Male	37	4 years	Chronic duodenal ulcer	Acute ulcer	63	—	0	0	Mild	M.
				Fatal Cases:							
26	Female	56	0	Cirrhosis hepatis	Cirrhosis and carcinoma of liver		Died 6 hours after admission				
27	Male	56	2 years	Chronic duodenal ulcer	Chronic duodenal ulcer	36	40	3	4,700	Died	L.+O.

M.=Meulengracht treatment by feeding. L.=Lenhartz treatment by initial starvation and ladder diet. O.=Operation.

when the patient entered hospital, and the final diagnosis, which was based on radiography and test meals in all cases, with the addition of gastroscopy and laevulose tolerance tests of hepatic efficiency when no ulcer was demonstrated by the *x* rays. All the cases with negative *x*-ray reports were not gastroscoped, and I have not attempted to distinguish accurately between gastritis, duodenitis, and acute ulcer.

Of the twenty-seven cases eight were chronic peptic ulcers, two were gastro-jejunal ulcers, fourteen were gastritis, duodenitis, or acute ulcer, and three were cirrhosis. I have already referred to the fact that seven of the cases of gastro-duodenitis gave long histories suggestive of chronic ulcer. The severity of the cases was assessed at approximately 30 per cent. mild, 40 per cent. moderate, and 30 per cent. severe; there was no difference in severity between the chronic ulcers and the cases of gastro-duodenitis and acute ulcer. It is noteworthy that ten of the patients had recurrences of bleeding after admission to hospital; four of them were severe and repeated, but only the patient submitted to operation died. I am also surprised to find the percentage of chronic peptic and gastro-jejunal ulceration so low, only 37 per cent., because it is generally assumed that it is a much commoner cause of gastro-duodenal bleeding in this country than acute ulcer or gastritis. The following cases show how hard it is to diagnose correctly the nature and situation of the lesion responsible for a gastro-duodenal haemorrhage.

CASE 1

A man aged 56 had had a "weak stomach" since acute appendicitis at the age of 26. For nine months he had had remittent dyspepsia characterized by dull aching pain, situated in the epigastrium, coming on one to two hours after meals, and relieved by alkalis. His attack of melaena was preceded by a sudden severe epigastric pain half an hour after breakfast. The provisional diagnosis was chronic gastric ulcer. An *x*-ray examination four weeks later showed no ulcer. Through the gastroscope a healing ulcer a few millimetres in diameter was seen, and the mucous membrane showed chronic gastritis. It was concluded that the ulcer with its attendant haemorrhage was an episode in the course of a persistent gastritis. Dyspepsia of the same type was still present a year later.

CASE 7

A man aged 64 had had attacks of indigestion for a number of years, lasting for a few weeks and not returning for some months. They hardly amounted to pain, an empty feeling in the epigastrium being relieved by food. He had nevertheless consulted his doctor and taken diet and medicine. An attack of this kind had been in progress for three weeks before the haematemesis and melaena which brought him into hospital, and a chronic duodenal ulcer was suspected. An *x*-ray examination eleven days later, while the stools still contained occult blood, revealed a high stomach, but no ulcer in the stomach or duodenum. Gastroscopy three weeks after the haemorrhage showed a normal gastric mucosa. He had hyperchlorhydria and a normal laevulose tolerance. A year later he was very well. I cannot believe that it would have helped these two patients in particular or my statistics in general to have submitted them to operation in the first forty-eight hours.

CASE 14

This patient, who had bled from a duodenal ulcer at the age of 42, bled from a gastric ulcer at 44. There was no change in symptoms to indicate the changed location of ulceration.

Operative Mortality

Acute ulcers are so difficult to find that one presumes that the surgeon would perform a gastrectomy if he could not easily palpate an ulcer. If he discovers a chronic ulcer he must likewise perform an extensive operation of the nature of a partial gastrectomy or a gastro-duodenectomy, since lesser procedures such as gastro-enterostomy and ligation of arteries have proved of no value. The mortality of gastrectomy depends on the type of case submitted to operation, and at St. Bartholomew's Hospital, where the surgery of peptic ulcer has been wisely conservative, gastrectomy has been performed for severe and intractable lesions only; the primary mortality of partial gastrectomy for peptic ulcer in the years 1919 to 1935 was 16.9 per cent. (Payne, 1936). I have given reasons elsewhere (Witts, 1936) for my belief that this figure could be reduced by better and longer pre-operative preparation, but I am certain that it would be raised if it became our practice to recommend operation on all patients believed to be bleeding from a chronic ulcer.

Cullinan and Price (1932) showed that a solitary haemorrhage was rarely fatal (mortality 4 per cent.), but that the mortality rose sharply with recurrence (40 per cent.), and reached 60 per cent. in patients with more than one recurrence. The prevention and treatment of recurrence is therefore the key to the reduction of the mortality from gastro-duodenal haemorrhage. I do not believe that it is possible to prevent deaths by immediate operation on all cases of gastro-duodenal haemorrhage, or on all severe cases, or on all cases believed to be bleeding from a chronic ulcer, and I think any of these practices would lead to an appalling rise in the general mortality from haematemesis and melaena. Finally, I do not myself believe that it is wise to treat *recurrent* bleeding by operation, though I realize that the available data are hardly sufficient for reliable judgement on this.

Cullinan and Price collected statistics of twenty-five patients with haematemesis submitted to operation, of whom eighteen died; this is a mortality of 72 per cent.—higher than the mortality of recurrent bleeding treated medically—though not all these twenty-five had bled more than once. All the patients in our two series submitted to operation for gastro-duodenal haemorrhage at St. Bartholomew's Hospital appear to have died. Finsterer (1936) records a mortality of only 5 per cent. for immediate operation and 30 per cent. for late operation for bleeding peptic ulcer, but Finsterer is an exceptional man, and we may no more expect as low a mortality at the hands of the average surgeon than we may expect to find Kreislers in every local orchestra. Moreover, Finsterer's results are much inferior to those of Meulengracht (1936). Meulengracht has a mortality of only 1 per cent. for medical treatment, and while every surgeon cannot be a Finsterer every physician can duplicate Meulengracht's simple treatment. Massive continuous-drip blood transfusions should not be an incentive to surgery, as they are just as likely to improve medical results as surgical results.

I am indebted to my colleague Dr. George Graham for an account of the following patient, a tailor aged 63, who was admitted to hospital with a haemoglobin count of 35 per cent. four days after the onset of haematemesis and melaena. He was immediately given 1,800 c.cm. of blood by intravenous drip, and his haemoglobin figure rose above 65 per cent. Bleeding apparently continued, for at the end of ten days his haemoglogin count had fallen below 30 per cent. and he had a small haematemesis. He was given over 4 litres of blood in the next week, but owing to recurrent bleeding the haemoglobin content was only 45 per cent. at the end of that time. A week later a further small transfusion was given, and altogether the patient received 6½ litres, or more than his whole total volume of blood. He did well, and *x*-ray examination ten weeks after the onset showed spasm of the pylorus but no ulcer.

Patients with recurrent bleeding are the only ones of whom we can feel certain that they are "likely to die if treated medically." Up to date we have had even more reason to feel certain that they are likely to die if treated surgically. The treatment of recurrent bleeding from the stomach and duodenum is a legitimate field for clinical experiment, and it is the only field in which it is safe to test the new technique of massive transfusion plus operation for haematemesis and melaena. The condition is obvious and introduces none of those difficulties in definition which occur when we attempt to divide cases into mild and severe. The mortality has been so high that desperate remedies are permissible. I have decided not to permit operation on any patient under my care for bleeding from the stomach or duodenum, even though the bleeding is severe or recurrent. I hope that some physicians and surgeons will decide to operate on all cases of recurrent bleeding from the stomach and duodenum which come under their care. If errors of sampling are avoided we shall then obtain reliable figures on which to base our judgements.

Haemorrhagic Shock

Blalock (1936) has made important observations on the effects of haemorrhage in animals. There is transient primary shock after a haemorrhage, but it is quickly overcome and the blood pressure returns to normal unless the bleeding is severe and prolonged, when secondary haemorrhagic shock may appear. The appropriate treatment is to restore the blood volume to normal by transfusion. Fall in blood pressure is a late sign, and if the pressure is allowed to remain at a low level for several hours it is difficult, if not impossible, to restore the animal, and transfusion is no longer beneficial. Deprivation of food and water, exposure to cold, and anaesthesia aggravate the shock. In human beings, though death may occur from anoxaemia soon after a severe haemorrhage, not infrequently the patient lingers for a few days in a condition of shock or cachexia before succumbing.

Many observers have noted a rise in the blood urea of patients with haematemesis and melaena, but though there is general agreement that the height of the rise is closely correlated with the severity of the haemorrhage the actual mechanism is still obscure. The rise is too rapid to be attributed to starvation or to absorption of protein or toxic substances from the blood effused into the alimentary tract. There is a little clinical evidence that dehydration, such as may accompany loss of blood, may produce breakdown of body tissues and set up a negative nitrogen balance, "but it is at best rather unsatisfactory" (McCance, 1936), and in experimental animals there is no increase in urinary nitrogen after a haemorrhage equal to 2 to 3.5 per cent. of body weight (Stewart and Rourke, 1936). There is therefore no reason to believe that the rise in blood urea after a haemorrhage is due to excessive production of urea or to tissue breakdown, and the negative nitrogen balance is easily explained by the large amount of nitrogen lost with the blood poured into the bowel. There is also no doubt that the blood urea rises after external haemorrhage, in which the blood protein is entirely lost to the organism (Meyler, 1935).

Dr. F. Avery Jones, working in my Unit, has collected data which clearly demonstrates the rapid rise of the blood urea after alimentary haemorrhage, whether initial or recurrent, the slow fall as the blood volume is restored by spontaneous dilution, and the more rapid fall when the patient is transfused. The rise is not correlated with any change in the alkali reserve or in the blood chlorides, which are usually normal in these patients. The blood pressure may be normal, the concentration of urea in the urine is high, and the total output of nitrogen may even be increased. I believe that the increase in the blood urea is due to the fall in the blood volume and in the blood flow through the kidneys at a time when the kidneys have the extra work of excreting a large amount of nitrogen derived from the blood in the intestine. But whether it is due to depression of renal function or to extrarenal causes—and this can only be settled by further work—the extent of the rise is a good index of the severity of the haemorrhage. The assessment of severity is by no means easy. The amount of blood vomited or passed through the bowel can rarely be measured. It may be several days after a haemorrhage before the blood volume is restored to normal, and not until then can the loss be calculated from the haemoglobin percentage. The blood pressure and pulse rate may be maintained at a normal level in spite of a copious haemorrhage. It is just in these early stages when judgement is difficult that an estimation of the blood urea is most helpful, and any case in which the blood urea rises above 75 mg. per cent. must be regarded as severe. This condition of secondary haemorrhagic shock, with its associated rise in blood urea, is sometimes described as uraemia, but the blood urea seldom reaches the high levels characteristic of nephritic uraemia.

Transfusion

We must base our attitude to the use of transfusion, morphine, the administration of fluid and diet, and other details of treatment on data of this type. Cullinan and Price showed clearly that transfusion does not act as a haemostatic in haematemesis and melaena; in fact it may even provoke further haemorrhage when given to a bleeding patient, though it does not provoke a recurrence in a patient who has stopped bleeding. Transfusion should not be used as a routine but should be regarded as the remedy for haemorrhagic shock. It should be employed whenever the pulse rises above 140, the systolic pressure falls below 90 mm., the blood urea rises above 100 mg. per 100 c.cm., or the haemoglobin falls below 40 per cent. Following these rules I have needed to transfuse only six of my twenty-seven patients, but three of these six needed repeated or massive transfusion. I. J. Wood (1936) has shown that glucose saline is much less effective than blood in controlling post-haemorrhagic shock and uraemia, and I have not used intravenous injections of this nature. I regard morphine as a symptomatic remedy for the alarm induced by the haemorrhage, and I do not administer it unless the patient is nervous and restless.

Administration of Fluid

The next question which arises is the administration of fluid. Goldman (1936) gives no fluid at all, either by mouth or parenterally, during the first twenty-four to forty-eight hours, on the grounds that fluid will stimulate further bleeding by diminishing the viscosity of the blood and raising the blood pressure. His mortality hardly encourages imitation, and I quote this extreme view because it enshrines fallacies which are present in a good deal of medical treatment. It is a mistake to concentrate entirely on treatment of the bleeding and to forget the general treatment of the patient. It is unphysiological to deprive an exsanguinated patient of fluid. There is no evidence that the administration of fluid or pultaceous food by mouth stimulates further bleeding. I tell my students that it is just as bad to let a patient with a

peptic ulcer suffer hunger and thirst as it is to let a patient with a fever be thirsty or a patient with pneumonia be cyanosed.

A sick patient requires 3½ litres of fluid a day (Coller, 1936). A patient with haematemesis or melaena has probably lost 2 to 3 litres of body fluid in blood and vomit. He should theoretically receive 6 litres of fluid on the first day and 3½ litres on subsequent days. Nothing like these quantities is given in the usual medical treatment of gastro-duodenal haemorrhage. Half-hearted attempts to give saline per rectum are discouraged by failure of retention or by recurrence of melaena, and patients remain for several days dehydrated, dirty-tongued, collapsed, and semi-uraemic. Every surgeon knows that it is possible to give large volumes of fluid intravenously or per rectum so long as the fluids are not irritating and are administered by continuous drip. If large volumes of fluid are given parenterally careful watch must be kept on the blood and urine chemistry to avoid overtaxing the body with chlorides or glucose. The main need after a haemorrhage is for water, and this can be given as tap-water per rectum.

Feeding by the Mouth

If the orthodox medical treatment of haematemesis is employed and food and drink are entirely withheld it is essential to give adequate amounts of fluid parenterally. Both rectal and parenteral fluid necessitates some disturbance of the patient. It is difficult to believe that we rest the stomach by withholding food and drink by the mouth, for the strongest waves of peristalsis occur when the stomach is empty; we are all familiar with the hunger-pain and the food-ease of peptic ulceration. I therefore decided to feed patients by mouth as soon as they were admitted to hospital. In making this decision I was naturally influenced by the work of Meulengracht (1934, 1935, 1936), who has now treated an unselected series of 273 patients with haematemesis and melaena due to peptic ulcer by the immediate administration of a bland diet and has had a mortality of only 1 per cent. In one-third of his patients haemorrhage from the ulcer had lowered the haemoglobin below 50 per cent. Cullinan and Price had made the same point in 1932, showing that patients who were starved for twenty-four or forty-eight hours were much more likely to bleed again than patients who were fed at once.

TABLE II.—*Relation of Recurrences to Starvation*
(Cullinan and Price, 1932)

Treatment	Cases which Bled for the First Time on the Day of Admission	Recurrence during the First 48 Hours
Starved 24 hours	36	9
Starved 48 hours	11	5
Fed at once	10	1

Meulengracht suggests several reasons for the beneficent action of early feeding. Patients are liable to die from exhaustion, and need a diet sufficient in calories and vitamins. He doubts the wisdom of keeping the stomach empty of food and exposed to free gastric juice. Food in the stomach seems to act as a haemostatic: ambulant cases of alimentary bleeding often do well without changing their diet, and patients admitted to hospital stop bleeding when they are fed. J. B. Hunter (1935) believes that the free flow of saliva which is produced by feeding further assists clotting. I have referred above to Blalock's experiments, which show the harmful effects of deprivation of food and water in haemorrhagic shock.

My own diet, which is given in Table III, is more fluid than Meulengracht's, as I was afraid to make too violent a break with tradition, but it provides the patient with 2,500 to 3,500 calories a day. The milk is not citrated and is flavoured, if desired, with ovaltine, bournvita, or Horlick's. Salt is permitted in moderate quantities, but other condiments are not allowed. Vitamin C is supplied in the orange and tomato juice. Marmite is given at least once a day for the vitamin B complex, and I also like my patients to have cod-liver oil and malt, or one of the concentrates of vitamins A and D. Between feeds sips of water, glucose solution, or half-strength isotonic saline are allowed in quantities up to 5 ounces an hour. If the patient is hungry he is allowed 5 ounces of milk at the intermediate hours. The total fluid intake averages about 2,750 c.cm., and allowing for the water of oxidation the patient is probably provided with some 3½ litres of fluid a day. No medication is given other than liquid paraffin or paraffin emulsion, and I deliberately avoid alkalis unless there is epigastric pain—which is of course unusual after a haematemesis. For certain experimental reasons iron has not usually been given early in these cases, though in the ordinary way it is both safe and wise to give treatment with iron from the start. To avoid disturbing the patient or provoking fresh bleeding no purgatives are allowed and enemata are postponed till between the fifth and the tenth days. I have described elsewhere how well this deliberate constipation

TABLE III.—*Dietetic Treatment of Gastro-duodenal Haemorrhage Arranged for Two-hourly Feeding*

Feeds by Day	Food	Day 1	Day 2	Day 3 and subsequent
1	Whole milk (fresh or dried) .. oz. Patent barley or strained porridge ..	5 Portion	5 Portion	5 Portion
2	1 egg beaten up in milk .. .. oz. Buttered rusks or cream crackers ..	5 —	5 1	5 2
3	Whole milk (fresh or dried) .. oz. Marmite to taste .. .. Barley sugar .. .. .. oz. Thin crustless white bread and butter .. .. slices	5 — 1 —	5 — 1 1	5 — 1 2
4	Strained orange or tomato juice .. oz. Vegetable purée .. .. Pudding .. .. Cream .. .. oz. Boiled or steamed fish	1 Portion " 1 —	1 Portion " 1 —	1 Portion " 1 Portion
5	1 egg beaten up in milk .. .. oz. Barley sugar .. .. .. oz. Butter rusks or cream crackers	5 1 —	5 1 1	5 1 2
6	Whole milk (fresh or dried) .. oz. Fruit purée .. .. Pudding .. .. Cream .. .. oz. Thin crustless white bread and butter .. .. slices	5 Portion " — —	5 Portion " 1 1	5 Portion " 1 2
7	1 egg beaten up in milk .. .. oz. Black treacle or barley sugar .. oz. Buttered rusks or cream crackers ..	5 1 —	5 1 1	5 1 2
8	Whole milk (fresh or dried) .. oz. Fruit purée .. .. Pudding	5 Portion "	5 Portion "	5 Portion "
Feeds at night (when awake)	1. Whole milk (fresh or dried) .. oz. 2. 1 egg beaten up in milk .. oz.	5 5	5 5	5 5
Between feeds	Strained orange or tomato juice .. oz.	1	1	1
	Approximate caloric value	2,545	3,118	3,624

is borne (Witts, 1937). Unless the patient is collapsed, when of course he should be transfused, I allow the head to be moderately raised, because the patient is more comfortable in this position than in the orthodox complete recumbency, and he can take food without swallowing troublesome quantities of air. When bleeding has ceased the ordinary indications are followed in raising the diet to the post-Lenhartz level.

Results of Diet

I will not pretend that all the patients have been able to take all the diet from the start, since some have had nausea and then they have not been pressed to eat. I do claim that they look, feel, and do much better than any previous series of cases of gastro-duodenal haemorrhage I have seen. When haemorrhage has recurred we have encouraged the patient to go on with the diet, and have tried to develop the impression that recurrence made the diet all the more vital and necessary. What have been the results? I have already described my early case where the patient died after operation. One other patient died within six hours of admission; she was known to have cirrhosis of the liver, and at necropsy she proved to have, in addition, a primary hepatic carcinoma. The remaining twenty-five did well.

The results have therefore been most satisfactory, for cases of alimentary haemorrhage which come to a general hospital include the more serious forms, and their mortality is higher than the average. The increase is not entirely explained by the disturbance of the journey, since there is a similar difference between private and public hospitals in the United States of America, where few patients are nursed in their own homes (Ledbetter, 1936). It must be attributed to the higher incidence of malnutrition and overwork among working-class patients with peptic ulcer, so that they are less able to withstand the effects of bleeding. It may be difficult to give adequate treatment such as transfusion in the home, and the risks of moving do not outweigh the benefits of hospitalization.

Seven of my patients gave a history of previous bleeding. Four of them have bled again since I treated them, one dying of cirrhosis. A few were advised to undergo surgical treatment when they had recovered from their haemorrhage. It is not my intention, however, to discuss the treatment of peptic ulcer in general, nor do I need to emphasize what is already common knowledge, that a patient who has bled once is likely to bleed again. When the patient has recovered from the haemorrhage the case must be carefully reviewed in the light, not only of the previous history and the physical examination, but also of the information provided by gastric analysis, *x* rays, and, where possible, gastroscopy, and it must be decided whether further treatment should be medical or surgical. The patient is now fit for surgery, and the operative procedure can be suited to the pathological findings instead of being dictated by panic.

Summary

1. No reliable judgement on the relative merits of operative and non-operative treatment of gastro-duodenal haemorrhage can be based on mass hospital statistics.

2. The best individual medical results (Meulengracht, 1936) are much superior to the best individual surgical results (Finsterer, 1936).

3. It is rarely possible to differentiate between an acute and a chronic ulcer in the first forty-eight hours, which is "the optimum period for surgical attack in haematemesis" (Gordon-Taylor, 1935).

4. Treatment has been too closely centred on the bleeding point, to the detriment of the patient as a whole. Death is more often the result of haemorrhagic shock than exsanguination, and orthodox medical treatment by starvation is calculated to increase haemorrhagic shock.

5. The results of immediate feeding, supplemented when necessary by transfusion, are much superior to treatment by starvation or operation.

6. A single gastro-duodenal haemorrhage is seldom fatal. The key to the reduction of the mortality of gastro-duodenal haemorrhage lies in the prevention and treatment of recurrent bleeding. There is a legitimate field for clinical experiment in the comparison of operative and non-operative treatment of recurrent bleeding.

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SOME OBSERVATIONS ON THE DICK TEST

BY

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In the course of routine work in a large fever hospital where Dick testing is carried out on a considerable number of patients one is constantly meeting with negative Dick tests early in scarlet fever, with Dick-positive tests during scarlet fever convalescence, and occasionally with Dick-negative subjects developing scarlet fever. The following investigations were commenced as a result of an unusual run of such anomalous Dick reactions.

The Dick test, which was introduced as a method of assessing the susceptibility of the individual to scarlet fever, was never claimed to be as reliable as its counterpart the Schick test, although its accuracy is generally regarded to be very high. Experience in English hospitals shows that if a nurse gives a clear Dick-negative reaction she is in almost every instance safe against scarlet fever even though working in scarlet fever wards.

Factors for Consideration

There are many factors which have to be taken into consideration when testing or comparing different toxins, and the one which probably plays the greatest part in such an investigation is the accuracy with which the toxins are injected. Accuracy in performing intradermal tests is only acquired with constant practice carried out with extreme conscientiousness on the part of the operator to ensure that the whole of the 0.2 c.cm. used is injected intradermally in such a manner as to produce a good wheal. Such a wheal should be about 1 cm. in diameter

and be dead white, with the pores of the skin shown as small dimples on the surface. Although wheals may vary slightly in different individuals, for the purpose of comparing toxins all those in the same individual should be of the same size.

Another important factor due to the transient nature of the reaction in many cases is the conditions under which the results are read. Artificial light does not show up faint positives well, and indeed some may be classed as negative unless special care is taken if artificial light is being employed. The best interval to allow between performing and reading the test is probably between twelve and eighteen hours. All the tests recorded below were read at three different intervals—namely, eight, twelve, and twenty-four hours after injection. At least one of these readings, and in some cases two, was done in artificial light.

The site chosen may be of importance. It is well for anyone who is contemplating doing work of this kind to test his own technique by injecting the same dose of the same toxin at two or three different sites on his own arm, or on a dozen available patients, and get a colleague to make the readings without knowing that the same toxin has been used. He will find that the majority of the readings will make "all three toxins" equal, but there will be a good deal of variation in some of the patients, and this is not referable entirely to the site chosen—assuming that all injections are done on the smooth surface of the forearm between the elbow and well above the wrist. The best comparison of two different toxins should be made at exactly corresponding sites on the two arms.

Other factors which require consideration are the strength and stability of the toxin. The more dilute the toxin the less well will it keep, and the temperature of storage has also to be taken into account, as deterioration is more marked at some temperatures than at others. In an attempt to overcome these factors various substances have been tested with a view to using them as "stabilizers."

Further questions presented themselves as regard the control fluids. Is there a pseudo-Dick reaction? How long does toxin have to be heated in order to destroy the toxin?

With all these factors to be taken into consideration it is obvious that a large series of tests has to be made to be of any value in assessing the merits of one toxin as against another. In an attempt to limit the human error to a minimum all the tests carried out were performed and read by myself. All the readings were measured in millimetres and any difference in intensity of the reactions in the same individual was carefully recorded. Any reaction less than 10 mm. in its largest diameter was classed as an unmeasurable reaction.

Two different toxins have been used in the investigations. Toxin A diluted 1 in 1,000 was estimated to be of the same strength as Toxin B 1 in 5,000. The first series of tests to be carried out were with Toxin A to ascertain its stability to heat and the effect of storage upon it.

Stability of Toxin A to Heat

For the purpose of estimating the heat stability only known Dick-positive reactors were used, and each was tested with toxin which had been heated for one, two, or four hours respectively. Two out of twenty-two children showed a small reaction at eight hours to toxin which had been heated for one hour, while six others had at the same period very small reactions, which could not have been mistaken for positive Dick reactions. The two that had small measurable reactions to toxin heated for one hour had small unmeasurable reactions to the toxin which had been heated for two hours. No reactions were recorded with the toxin which had been heated for four hours. The minimum time necessary to inactivate Toxin A appears, therefore, to be four hours.

Stability of Toxin A on Storage

To determine the effect of storage on Toxin A, or what may be termed the "life" of Toxin A, four samples prepared on different dates were compared. These were respectively fresh two-, four-, and six-month-old toxin which had been kept in cold storage from the date of preparation. No evidence of deterioration was found in the six- or four-month-old specimens, but slightly smaller reactions were obtained with the two-month-old sample as compared with the other three.

The reason for the apparent weakness of the two-month-old sample was difficult to explain; only later did we become alive to the bearing on the results of the composition of the stabilizing mixture used.

This series, which was carried out using only twenty individuals in each investigation, at once raised the question of the difficulties of comparing toxins as mentioned above, and the later investigations were carried out as a result on a much larger number of individuals in an effort to reduce error so far as possible.

Comparison of Toxin A and Toxin B

The second series was a comparison of Toxin A diluted 1 in 1,000, with Toxin B diluted 1 in 5,000, and then with Toxin B diluted 1 in 3,000. In the former comparison sixty-five children whose average age was 4.1 years were tested. Of these fourteen were negative to all tests; twenty-two were positive to all tests, and the remaining twenty-nine showed a positive to one or other or both toxins at one or more of the readings as follows.

	At 8 hours		At 12 hours		At 24 hours	
Toxin	A	B	A	B	A	B
Number + ...	20	14	22	13	17	4

Generally the reactions to Toxin A were a few millimetres larger than those of Toxin B in the same individual, although in a few instances the reverse was true. Toxin A produced sixteen readings which were definitely brighter than those of Toxin B in the same individual, while only four were brighter with B than A. The conclusions reached were that Toxin A was the better, that the maximum number of positives were noted at the 12-hour reading, and that frequent readings were desirable before the result was read as negative.

When comparing Toxin A with Toxin B diluted 1 in 3,000 fifty-three children whose average age was 6.1 years were tested. Of these twenty-six were negative to all readings; fifteen were positive at all readings, and the remaining twelve showed a positive reaction at one or more readings to one or other toxin or both as follows.

	At 8 hours		At 12 hours		At 24 hours	
Toxin	A	B	A	B	A	B
Number + ...	2	7	7	8	4	5

The results were practically the reverse of those in the previous series. Toxin B gave the slightly larger readings, and in twenty-five instances the brighter reactions. Toxin A was brighter on only two occasions. In three cases measurable reactions occurred with both controls at the eight-hour reading comparing closely in size with the corresponding toxin reactions. Only in one subject did they persist at the twelve-hour reading, and here again they were both equal in size;

presumably this represented a true rare pseudo-reaction. None was observed at the twenty-four-hour reading. The results can be tabulated as follows.

TABLE I

Toxin A 1/1,000	>	Toxin B 1/5,000	in	32	instances
" " "	<	" " "	"	5	"
" " "	=	" " "	"	11	"
Toxin A 1/1,000	>	Toxin B 1/3,000	in	3	instances
" " "	<	" " "	"	19	"
" " "	=	" " "	"	3	"

The next investigation performed was to test the stability of Toxin B to heat and its "life" under varying conditions of storage.

Stability of Toxin B to Heat

In twenty-two cases nine positive reactions, all unmeasurable, were noted with the toxin heated for one hour and only two with the toxin heated for two hours, which compares almost exactly with the figures obtained with Toxin A. The reactions, however, appeared to persist longer, three being still visible at twenty-four hours.

Stability of Toxin B on Storage

The figures obtained when using Toxin B stored for three months under varying conditions—namely, at 4° C., at room temperature, and at 37° C.—showed that there was definite deterioration in all specimens as against the freshly prepared toxin, with a slight advantage for toxin kept at 37° C. Twenty-eight children were tested whose average age was 3.1 years. Of these, five were negative to all tests, five showed slight unmeasurable reactions to one or more toxins at one or more readings, nine were positive to all toxins at all readings, and the remaining nine showed a positive reaction to one toxin or more at one reading or more. At twenty-seven readings the fresh gave definitely brighter reactions than the stored materials in the same individual, while in nearly every case the measurements were slightly greater. The smallest and/or faintest reactions were noted as follows: fifteen were with the toxin stored at 4° C.; fourteen with the toxin stored at room temperature, and eight with the toxin stored at 37° C.

The results of different workers had suggested that Toxin B was somewhat less stable than A, and further investigation was stopped in order to test the effect of adding a stabilizer. Toxin B was diluted 1 in 4 with stabilizer, and for the purposes of clarity this toxin will be referred to as Toxin C.

Specimens of Toxin C diluted 1 in 1,000 with boric-borate mixture stored at 4° C. and at room temperature for six weeks were compared with a freshly prepared toxin of the same strength. Twenty-five children, average 3.7 years, were tested, and of these three were negative to all tests. The readings showed a very slight superiority of the freshly prepared material over the other two, but in several instances the reverse was true. It was difficult to draw any distinction between the 4° C. and the room temperature samples, because in the majority of cases the difference was less than two millimetres and therefore quite within the limits of personal error. It would appear that Toxin C remains stable for a period of at least six weeks.

Comparison of Toxins A, B, and C

Finally, Toxins A, B, and C were compared against each other on three different dates. The toxins were all prepared fresh five days before the first group of children were tested, and they were kept at room temperature until the second and third groups were tested at intervals of a week. The summary of the results are best expressed in tabular form (see Tables II and III). The numbers in the last group are smaller than the other two on account of the fact that exactly half of the children tested were negative to all three toxins, which is an unusually high figure.

In Table II the numbers in the first columns are those in which the toxins gave the largest and/or brightest reactions as compared with the other two in the same individual, while the second columns give the percentage of those numbers. It will be seen that the fresh toxins, at 60 per cent. of the readings Toxin C gave the best reactions, and after they had been kept at room temperature for two weeks this figure had increased to 78 per cent. Toxin B had dropped from 10 per cent. to 3 per cent. during the same period.

The numbers classified as undecided refer to the readings at which at least two, and in a few cases all three, reactions in the same individual were so close, both in intensity and measurement, that no one toxin could be singled out as superior.

TABLE II.—*Readings showing the Brightest and/or Largest Reactions*

Toxin	Fresh		One Week		Two Weeks	
	No.	Per cent.	No.	Per cent.	No.	Per cent.
A	6	12.5	12	17.4	3	9.4
B	5	10.4	5	7.2	1	3.1
C	29	60.4	45	65.2	25	78.1
Undecided	8	16.7	7	10.2	3	9.4

In Table III the numbers in the first columns are those in which the toxins gave the faintest and/or smallest reactions, as compared with the other toxins in the same individual, and in the second column those numbers are expressed as percentages. In this table Toxin C falls from 10 per cent. of the total when the toxins are used fresh to *nil* when compared after two weeks, and Toxin B rises from 27 per cent. to 40 per cent. The numbers classified as undecided are those in which no toxin could be singled out as inferior to the others. Naturally this group is larger than the corresponding group in Table II as it is much harder to distinguish between two faint tests than two bright ones.

TABLE III.—*Readings showing the Faintest and/or Smallest Reactions*

Toxin	Fresh		One Week		Two Weeks	
	No.	Per cent.	No.	Per cent.	No.	Per cent.
A	16	33.3	22	31.9	9	28.2
B	13	27.1	28	40.6	13	40.6
C	5	10.4	4	5.8	—	—
Undecided	14	29.2	15	21.7	10	31.2

The results show that over the short period there is a progressive superiority of Toxin C with a corresponding inferiority of Toxin B. Toxin A appears to be almost as stable as Toxin C, but not quite so potent.

Discussion

The object of the investigation was to find:

(1) How accurately one could titrate one sample of Dick toxin against another.

(2) How stable was ordinary Dick toxin.

(3) If certain preparations of Dick toxin were unstable, could they be stabilized?

(4) How long the toxin must be heated to destroy toxin and provide a satisfactory control fluid.

(1) It is clear from Table I that it is not an easy matter to match two toxins. It is well known that if one is trying to compare two Schick toxins on guinea-pigs one would find that if the toxins differed in strength by about 10 per cent. *all* the guinea-pigs would give a result in favour of the stronger toxin. Table I shows that when the comparison was made between Dick toxin A 1 in 1,000 and the weak 1 in 5,000 dilution of Toxin B, A was stronger than B, since thirty-two out of forty-

eight patients said "greater than" and eleven said "equal"; but even here five patients out of forty-eight indicated that A was weaker than B—that is, 10 per cent. gave what is obviously an inaccurate answer. Similarly, when Toxin A was compared with Toxin B 1 in 3,000, it is clear that A was weaker than this dilution of B, since nineteen patients said so, but six out of twenty-five patients gave an inaccurate answer. It is fair to conclude that if one is trying to compare two Dick toxins one must use a larger number of patients, probably about fifty, before one can get a reasonably accurate answer. This difficulty in matching two toxins and the necessity of using a large number of patients appears clearly from the careful work of Okell and Parish on over 150 patients reported by O'Brien (1930).

(2) Tables II and III indicate that Toxin B was less stable than A or C. Toxin B was a dilution made with the ordinary boric-borate solution originally described by Glenny, Pope, and Waddington (1928) and referred to in the *British Pharmacopoeia* (p. 463). This diluted toxin was less stable than the toxin called C in the tables, which consisted of the original toxin first diluted 1 in 4 with a stabilizing mixture, and then diluted 1 in 1,000 with the boric borate mixture. Dr. H. J. Parish of the Wellcome Physiological Research Laboratories has kindly given me this information, and told me that various stabilizing solutions are under test at the laboratories.

(3) Apparently the "stabilizer mixture" used for Toxin C has given satisfactory results, for Tables II and III indicate that the toxin has been potent up to two weeks after dilution, and later tests which we made show that six weeks after dilution this "stabilized Dick toxin" gave almost as good results as the fresh material. I understand from Dr. O'Brien that this result agrees with the laboratory investigations, and some made by other clinicians, and that his confident expectation is that this dilution is stable for much longer periods.

(4) The control Dick toxin must apparently be heated for four hours to make quite sure that the toxin is inactivated. With such a solution pseudo-reactions are extremely rare, but apparently one does encounter a patient now and then with what must be accepted as a pseudo-reaction, detectable only if frequent readings are made. Pseudo-reactors are so rare that one is almost safe in dispensing with the use of the control fluid when testing ordinary patients.

Summary

Different Dick toxins can be satisfactorily matched only if the technique is carefully standardized, frequent readings are made, and a considerable number of patients—probably fifty—are available.

A properly stabilized Dick toxin dilution apparently gives when six weeks old virtually as good reactions as when freshly made up.

Dick control fluid should be heated for at least four hours.

Pseudo-reactors are very rare, but are encountered from time to time.

I am indebted to Dr. J. McGarrity, medical superintendent of the hospital, for permission to carry out these tests and for his kindly advice and encouragement; and to Dr. R. A. O'Brien of the Wellcome Physiological Research Laboratories for supplying the materials used and for his helpful suggestions.

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FURTHER OBSERVATIONS ON THE TREATMENT OF TETANUS

BY

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A study of 229 cases of tetanus, with special reference to the antitoxin treatment, was recorded in a previous publication (1932). The following further observations are offered on the results of the treatment of 438 consecutive cases admitted to the J.J. Hospital from 1931 to 1935 inclusive.

Numerous papers have been published since 1932 in which the value of intrathecal injection of the antitoxin by cisternal puncture has been seriously questioned. The majority of workers advocate large doses intravenously in the early stage. Cole (1934) in a recent paper mentions that the incubation periods of our previous series were not given and that serious cases were excluded. It may be pointed out that the incubation periods of all cases were tabulated in the paper and the total mortality rate, including all serious cases, was given. The mortality rate, after deduction of cases resulting fatally within twenty-four hours of admission, was only a part of the tabulated results. The period of onset, which was not worked out in the previous series, has been included in the present one.

Recent work on the treatment of tetanus has proceeded mainly along two lines: the control of the exhausting spasms by the use of, among other things, curare and basal narcotics; secondly, the administration of a large initial intravenous dose of antitoxin. The following conclusions were reached in the previous paper:

1. That the use of tetanus antitoxin was rational and necessary.

2. The combined intrathecal (by the cisternal route), intravenous, intramuscular, and subcutaneous method gave the most promising results.

The present series of 438 cases was treated along similar lines. The antitoxin used, however, came from three different manufacturers, the potency marked on the tubes being uniform. The use of sedatives was standardized. Carbolic acid and magnesium sulphate injections were not used. Out of the total of 438 cases 209 (49.4 per cent.) were cured, 214 (50.6 per cent.) ended fatally, and 15 were discharged at request; 127 patients died within twenty-four hours of admission. Excluding these the mortality works out at 29.4 per cent. The corresponding figures for the previous series were 46.4 per cent. and 23.4 per cent. It may be mentioned that all the cases of the previous series had one brand of antitoxin.

For purposes of study the cases are grouped in the following tables: I.—Age. II.—Incubation period. III.—Period of onset. IV.—Period of onset with the incubation period. V.—Type of injury.

TABLE I.—*Age*

Age ..	1-10	11-20	21-30	31-40	Above 40	Not known
Number	78	89	120	101	44	6
Cured	42 (55.2%)	42 (49.4%)	63 (54.3%)	45 (46.4%)	15 (34.8%)	2 (40%)
Died	34 (44.8%)	43 (50%)	53 (45.7%)	53 (53.4%)	28 (65.2%)	3 (66%)

Discharged at request, 15.

This table corroborates the observation that the prognosis is better up to the age of 30 and then becomes progressively worse; very few patients over 50 recover.

TABLE II.—*Incubation Period*

Incubation period in days	1-5	6-10	Above 10	Not known
Number	73	78	100	172
Cured	27 (37%)	29 (37.1%)	68 (68%)	85 (49.4%)
Died	46 (63%)	49 (62.9%)	32 (32%)	87 (50.6%)

Discharged at request, 15.

Out of 214, 127 died within twenty-four hours; the incubation period of 58 out of 127 was under ten days, and in 52 it was not known, but was presumably short.

TABLE III.—*Period of Onset*

Days	1	2	3	4 and above	?
Number	108	85	94	96	55
Cured	44 (41.4%)	38 (45.2%)	47 (53.4%)	62 (68.1%)	18 (33.9%)
Died	63 (58.9%)	46 (54.8%)	41 (46.6%)	29 (31.9%)	35 (66.1%)
Died in 24 hours	40	25	25	16	21

Discharged at request, 15.

The previously published series did not contain this table. The rapidity of the development of symptoms appears to be the important factor in prognosis.

The following tables show the comparison between the incubation period and the period of onset.

TABLE IV.—*Period of Onset with the Incubation Period*

	One Day				Two Days			
Incubation period	1-5	6-10	11+	?	1-5	6-10	11+	?
Number	24	35	25	24	15	20	17	33
Cured ..	5 (20.8%)	12 (35.3%)	18 (72%)	9 (62.5%)	3 (20%)	8 (40%)	10 (62.5%)	17 (51.5%)
Died ..	19 (79.2%)	22 (64.7%)	7 (28%)	15 (58.9%)	12 (80%)	12 (60%)	6 (37.5%)	16 (48.5%)
Died in 24 hours ..	14	12	4	10	40	5	7	4

	Three Days				Four Days and Above			
Incubation period	1-5	6-10	11+	?	1-5	6-10	11+	?
Number ..	18	9	27	40	16	12	26	42
Cured ..	10 (58.8%)	2 (22.2%)	14 (55.5%)	21 (58.3%)	8 (50%)	7 (63.6%)	20 (80%)	27 (69.2%)
Died ..	7 (41.2%)	7 (77.8%)	12 (44.5%)	15 (41.7%)	8 (50%)	4 (36.4%)	5 (20%)	12 (30.8%)
Died in 24 hours ..	5	6	7	7	6	2	1	7

Discharged at request, 15.

No history was available with regard to the period of onset or the incubation period in fifty-five cases; out of these eighteen (33.9 per cent.) were cured and thirty-five died (66.1 per cent.). Twenty-one of these died within twenty-four hours; two were discharged at request.

The tables show that, even with a short incubation period, if the period of onset has been three days or over—that is, if the disease has been developing gradually and is not progressing rapidly—there are many chances of recovery.

TABLE V.—*Type of Injury*

	Nail	Septic	No Evidence of Injury
Number	65	248	115
Cured	23 (35.3%)	134 (51.77%)	52 (49.9%)
Died	42 (64.7%)	116 (48.3%)	56 (50.1%)

Discharged at request, 15.

The deep penetrating injuries, such as by nails, are more often followed by tetanus, and the cases carry a high mortality.

The type of case suitable for judging the results of any method of treatment falls within the groups of incubation periods from one to ten days and the period of onset from one to two days. If the mortality rate can be shown to improve in these groups by any method of treatment that method should receive serious consideration. In 115 cases no injury or source of entry could be discovered; this is a large proportion. Either apparently trivial or unnoticeable injuries may carry the infection, or the organisms that may be present in the lumen of the bowel may become pathogenic. Careful cultural examination of the stools of these patients as well as those of the community at large requires to be done if any light is to be thrown on this question of idiopathic tetanus. Even when there is no known portal of entry the disease takes a heavy toll, as fifty-six out of 115 cases showing no evidence of injury ended fatally.

Dosage and Mode of Administration

Great difference of opinion prevails among workers regarding the dosage and mode of administration of the antitoxin. Taylor (1934) thinks large doses unnecessary, while Miller and Rogers (1935) recommend large doses intravenously. Cole (1934) recommends one large dose intravenously and believes that the amount is sufficient to neutralize all toxin that may be present and that may be thrown into the circulation from the focus of infection. That some of the antitoxin is present in the blood ten days after administration Cole has proved by animal experiments.

In the present series moderately large doses have been used initially: 40,000 units intrathecally through the cisterna magna and 80,000 units intravenously and intramuscularly in equal parts. Daily administrations of 40,000 to 80,000 units according to the severity of the case, intravenously or intramuscularly, or both, were given till the spasms were fully controlled. It has been noted that premature stoppage of the serum has been followed by a return of the spasms. The total dose has often reached 400,000 units or more.

Experiments on Guinea-pigs

From recent experimental evidence it appears that intrathecal administration of serum does not act on any toxin present in the cerebro-spinal fluid, for none is found in it. We carried out certain experiments in guinea-pigs to find out if any toxin was present in the cerebro-spinal fluid. Serum and cerebro-spinal fluid from tetanus patients were injected intraperitoneally into guinea-pigs as well as serum from normal persons serving as controls; three guinea-pigs were used for each case in the beginning: 3 to 5 c.cm. of the serum and 5 to 10 c.cm. of the cerebro-spinal fluid were injected. The animals went into spasms from five to ten minutes after the injection of serum from the patients with tetanus, but did not develop any spasms after the injection of cerebro-spinal

fluid from tetanus patients or serum from the normal controls. This method can be used as a useful test for the diagnosis of tetanus in doubtful cases: 3 to 5 c.cm. of blood serum from the suspected patient are injected into the peritoneal cavity of a guinea-pig; the animal shows spasms, jerky movements of the head and body after a preliminary stiffness if the serum comes from a case of tetanus. An earlier diagnosis is thus possible in doubtful cases. The antitoxin in the cerebro-spinal fluid therefore acts through absorption in the blood stream. Clinically it controls the spasms better and earlier. This observation is made so often that it cannot be dismissed lightly. It is possible that the absorption is slower and steadier, and the effect of the intravenous injection is thus maintained for a longer period. The rate of absorption of the antitoxin from the cerebro-spinal fluid into the blood stream and the amount of antitoxin present in the blood from day to day after this injection are well worth study.

Sedatives to Control Spasms

The control of spasms by the use of suitable sedatives is the other problem before workers. A large number of sedatives are being advocated. The patient is in a state of hyperexcitability. All kinds of external stimuli throw him into spasms. The majority of these patients have received paraldehyde per rectum for the control of spasms—4 drachms in 2 oz. of saline by the drop method four-hourly, varied according to the requirements of each individual case. The use of somnifaine by injection or avertin per rectum has been advocated. Several articles have appeared on the use of curarine, the alkaloid from curare, the arrow poison. This has a paralysing action on the neuro-muscular junctions. The dose has to be carefully regulated, as respiratory muscles are likely to be paralysed if a large dose is inadvertently given. Very efficient nursing is therefore necessary if this drug is to be used as a routine measure. The work of Abel *et al.* (1934, 1935) may be mentioned here. They have overhauled the older conception of the disease and consider that the toxin has a peripheral action on the neuro-muscular junctions in the muscles themselves. The descending order of the spasms, however, has not been sufficiently explained.

Summary and Conclusions

1. A further series of 438 cases of tetanus has been observed, with special reference to the use of antitoxin.

2. The combined method of administration of the antitoxin, intrathecally through the cisterna magna, intravenously, and intramuscularly, has continued to be used in this as in the previous series.

3. The total mortality of all consecutive cases, except the fifteen that were discharged by request, has been 50.6 per cent., and after excluding those that died within twenty-four hours of admission, 29.4 per cent. This compares somewhat unfavourably with the previous figures, but may probably be explained by the fact that several brands of sera have had to be used in the present group while only one brand was used for the previously published group.

4. The routine use of paraldehyde per rectum is recommended in all cases as the most suitable sedative for hospital patients.

5. The clinical fact that the intrathecal administration of serum through the cisterna magna along with the other routes controls the course of the disease better, establishes the need for further study of concentration of antitoxin in the blood serum after intrathecal injections.

I take the opportunity of thanking Lieut.-Colonel Vazifdar, I.M.S., for facilities with regard to the treatment of the patients, and my successive house-physicians, without whose co-operation this work could not have been carried out. I also thank Dr. Manohar and Dr. Nene for helping me with the guinea-pig experiments.

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TREATMENT OF MENINGITIS WITH MENINGOCOCCAL ANTITOXIN

BY

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Until recent years the only specific agent available for the treatment of meningococcal meningitis was anti-meningococcal serum, but lately there has been produced a meningococcal antitoxic serum,* with which a series of four cases was successfully treated at the Kingston and District Hospital during the last year.

This serum is the result of the work of Dr. N. S. Ferry, who, with his associates, investigated the properties of broth filtrates of the meningococcus (1931), and showed that specific extracellular toxins were produced with each of the four Gordon types of the meningococcus. Further, it was found that animals could be immunized with each of the toxins and true antitoxins produced which, when investigated in the case of the guinea-pig and monkey (1932, 1934), rabbit (1934), and finally the human being (1935), were shown to have a curative effect against live virulent meningococci, besides a neutralizing one on the specific soluble toxins. These effects were not only specific for the type of meningococcus against which the antitoxin was produced, but were apparent to a lesser extent for all types of meningococci.

Dr. H. L. Hoyne (1935), in an investigation of a series of eighty-five cases treated with antitoxin, showed that the mortality was 23.5 per cent. as against 45.9 per cent. for cases treated with anti-meningococcal serum. After eliminating those cases in which the patient died within 48 hours of admission to hospital, the mortality was 9.6 and 29.6 per cent. respectively. Dr. Hoyne noted that following the use of antitoxin there was a prompt response of the infection, and he favoured large doses of 60 to 100 c.cm. administered intravenously in order that the toxin should be rapidly neutralized. It was recommended that these quantities should be given diluted in twice the volume of normal saline or 10 per cent. glucose solution.

The four cases reported below, all children, were treated with Ferry's serum on these lines, and gratifying improvement appeared to follow its use. In two cases meningococci were found in the cerebro-spinal fluid, but in the other two no organism was identified. In each case there was a rapid improvement in the general condition of the child associated with a decrease in the number of leucocytes in the cerebro-spinal fluid. The antitoxin was given

* By Parke, Davis and Company.

undiluted intrathecally and intravenously in all four cases, two of which developed a well-marked serum reaction on the tenth day.

From the hospital records as far back as 1928 there appear to have been only six proven cases of meningococcal meningitis, of which five were treated with anti-meningococcal serum. All the cases ended fatally, the longest survival period being sixteen days. It is our impression that the use of antitoxin exerts a favourable influence on the prognosis of meningococcal meningitis, and that administration by the intravenous route is the most advantageous.

Case I

A girl, aged 13, developed generalized headache and persistent pain in the neck which was becoming gradually worse, and was admitted to hospital on the eighth day. She then presented a typical picture of meningitis, with very marked head retraction. The temperature was 104° F. and the pulse 100. The cerebro-spinal fluid was under greatly increased pressure and milky in appearance, containing 2,990 cells per c.mm., all of which were neutrophil; and from a later specimen meningococci were obtained. Daily lumbar puncture was performed under light ether anaesthesia, as it was found that this gave a rather better flow of cerebro-spinal fluid; moreover, the child preferred it to local anaesthesia. Antitoxin was given, 30 c.cm. intrathecally on the first day, and 90 c.cm. on the sixth day, followed by 110 c.cm. on the next three days. The cerebro-spinal fluid was normal by the thirtieth day, the child having made a complete recovery.

Case II

A boy, aged 14, had been ill for one day prior to admission with rapidly developing headache, abdominal pain, and delirium. His general condition was very bad: temperature 96° F., pulse rate 62, delirious, and with well-marked head retraction. The spinal fluid was under greatly increased pressure, very milky in appearance, and contained 100,000 leucocytes per c.mm., while a stained film showed many organisms morphologically identical with meningococci. Failure to culture these organisms was thought to be due to the fact that the laboratory was some distance away. Repeated spinal puncture was performed under ether anaesthesia, and a total of 134 c.cm. of antitoxin was given intrathecally and 163 c.cm. intravenously during the first sixteen days. The number of cells in the cerebro-spinal fluid gradually fell in association with an improvement in the boy's general condition, and on the twelfth day there were 95 per c.mm., all lymphocytes, while the fluid was normal on the twenty-fifth day. The patient made an uninterrupted recovery and there were no sequelae.

Case III

A girl, aged 10, had been unwell for three days before admission with severe headache, vomiting, and general pains in the back and limbs. Her condition was very poor: the temperature was 102.4°, the pulse rate 110, and she was very irritable, with some head retraction and pronounced neck rigidity. Kernig's and Brudzinski's signs were strongly positive. The spinal fluid was under increased pressure and milky in appearance, and contained 7,000 leucocytes per c.mm. No organism was ever identified. Repeated spinal puncture was performed under ether anaesthesia, and large doses of antitoxin given intravenously: 90 c.cm. on the first day, 60 c.cm. on the second, and 30 c.cm. on the fourth. From the third to the ninth day a total of 85 c.cm. was given intrathecally. The child became apyrexial by the seventh day, and the cell count in the cerebro-spinal fluid slowly fell to normal by the twenty-seventh day. There were no sequelae and recovery was complete.

Case IV

A girl, aged 13, was suddenly taken ill with severe occipital headache and increasing unconsciousness, vomiting, and involuntary movements of the limbs. She was admitted twenty-four hours later, when her temperature was 97.4° and pulse rate 80. She was unconscious; jaw spasm was present and neck rigidity was marked. The limbs were flaccid, Kernig's sign was positive, and there was a slight strabismus. Lumbar puncture revealed a very turbid white fluid under a pressure greater than 300 mm. of cerebro-spinal fluid, which showed a count of 9,120 cells per c.mm., all polymorphonuclears. No organism could be identified. A dose of 80 c.cm. antitoxin was given intravenously, and lumbar puncture performed under ether anaesthesia each day. On the second day in hospital the patient slowly returned to consciousness, and her temperature rose irregularly to 103.2°. Antitoxin was given intravenously and intrathecally for the first thirteen days, the amounts totalling 405 c.cm. and 200 c.cm. respectively. By the middle of the third week she was apyrexial, and the spinal fluid showed a normal cell count by the thirty-second day. The strabismus disappeared slowly, and by the seventh week she appeared to have made a complete recovery.

I wish to record my thanks to the late Dr. P. Vernon Davies, medical superintendent of the Kingston and District Hospital, for permission to publish notes of these cases, and to Dr. E. C. Warner, consulting physician to the hospital, for valuable advice and criticism.

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A NOTE ON THE EXAMINATION OF TUBERCULOSIS HOME CONTACTS

BY

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It is no longer disputed that there is a greater incidence of tuberculous disease in contacts of persons suffering from pulmonary tuberculosis than in the general population. This is admitted independently of any views that may be held on the mechanism by which the disease develops in the contacts: whether it is primary infection or reinfection (endogenous or exogenous), or whether it is due to superinfection or to lowered resistance associated with poor economic circumstances in the family of a tuberculous adult. But much difference of opinion still exists on the extent of this increase in incidence in contacts as a whole and in contacts at various ages. Nor is the significance of latent tuberculous lesions as yet fully appreciated.

The subject of contact examination came up for discussion recently at the annual conference of the National Association for the Prevention of Tuberculosis (1936). It was then stressed by some speakers that active pulmonary tuberculosis in children was uncommon, although it was stated, with insufficient emphasis, that latent lung lesions and active foci in other organs occurred in an appreciable number of children in addition. One speaker pointed out that the supervision of all contacts was not a practical proposition at present. Basing himself on an index of 2.5 (according to the 1931 census the average size of the London family was 3.46 persons), and assuming that it was necessary to follow up a contact for five years, he calculated that this would mean in London the supervision of about 65,000 people. Arguing on the relative infrequency of active pulmonary tuberculosis in children, he urged that instead of paying increasing attention to child

contacts we should therefore concentrate on the adolescent group. I have already (1936) pointed out how inadvisable it was to appear to encourage neglect of examination of child contacts. It has since occurred to me that yet another aspect must be considered in this "worthwhile" argument—the relative number of contacts at various ages.

The following investigation is not considered extensive enough for forming definite conclusions, but it does serve as a pointer, and its publication may encourage a similar investigation on a larger scale.

The Investigation

All the patients in the wards of the County Sanatorium, Clare Hall, were interviewed, and information was obtained on the number and ages of the persons in contact with them before admission to the sanatorium. Particular care was taken to ascertain the actual contacts in the *home*, and neither the family nor the house were taken as the unit. This care is necessary because of lodgers and sublet rooms, and in regard to patients living "on their own." The results are shown in Tables I to III; they were worked out separately for the men and the women patients so that there might be a slight check on the error of sampling.

TABLE I.—*Female Patients*

69 patients—211 contacts—3.0 contacts per patient.

The contacts were distributed as follows:

Age	Number	Per Cent.
0–5 years	19	9
6–15	35	17
16–30	66	31
31–50	42	20
Over 50	49	23

TABLE II.—*Male Patients*

119 patients—377 contacts—3.1 contacts per patient.

The contacts were distributed as follows:

Age	Number	Per Cent.
0–5 years	30	8
6–15	75	20
16–30	131	35
31–50	70	19
Over 50	71	19

TABLE III.—*All Patients*

188 patients—588 contacts—3.1 contacts per patient.

The contacts were distributed as follows:

Age	Number	Per Cent.
0–5 years	49	8
6–15	110	19
16–30	197	34
31–50	112	19
Over 50	120	20

Comment

There is a close similarity in the figures obtained from the male and the female patients. The figure of three contacts to a tuberculous patient is interesting as showing that the index of 2.5 may be too low in regard to families containing a tuberculous adult. It should be remembered, however, that in this investigation the home and not the family was the unit, as it should be in dealing with contacts; and another point to be noted is that at Clare Hall children under 15 were not admitted.

From the figures in the tables I should like to comment on two age groups. A fifth of the contacts are over 50. At first sight the detection of tuberculous disease in these might appear relatively unimportant. This, however, is not so. For it is in just this group that the primary case might be found—that is, the person responsible for the disease in the patient whose contacts are being examined. And the discovery of the primary case is vital, as otherwise the removal of the tuberculous patient from the home will lead to a fool's paradise in regard to the other inmates.

The low percentage of contacts under the age of 6 is of interest in regard to the argument at the beginning of this note. Tuberculosis is a relatively mild disease in children over the age of 5. Moreover, the form it usually assumes in them (affecting bones, joints, and glands) leads to advice being sought by parents spontaneously. There is, too, the fact that children over 5 come under the supervision of the school medical service. None of these circumstances applies to very young children. In them detection of tuberculous disease *or* infection and the *prevention* of infection is of paramount importance (Kayne, 1935, 1936). The relatively small percentage (8 per cent.) of these children in the whole group of contacts would therefore hardly justify a policy that encourages less concentration on the examination of young children on the ground of the alleged large total number of contacts to be examined.

I have to thank Dr. F. A. H. Simmonds, medical superintendent, for permission to carry out the investigation, and Dr. John Tate, county medical officer, Middlesex County Council, for permission to publish this note.

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SEVERE RECTAL INJURIES CAUSED BY AN ENEMA GIVEN THROUGH A RIGID NOZZLE

BY

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Injuries to the rectum following on the administration of a soap-and-water enema are not common, but when they do occur they may be of so serious a nature that I consider the following case should be put on record.

Clinical Record

A married woman, age 56, of somewhat stout build, had suffered for many years from chronic bronchitis and asthma. On March 5, 1932, she was seized with a severe rigor during the night. She felt increasingly ill during the next two days, when her doctor (Dr. W. D. Allan) was called in. He found her to be suffering from bronchopneumonia affecting one lung. Two days later both lungs were involved, and she was critically ill. In ten days' time she had improved somewhat, but was still very ill. At this time the patient was given an enema by her daughter. An ordinary Higginson's syringe with a bone nozzle, as usually supplied by chemists, was used. The result of the enema was said to be poor. The patient complained of no pain at the time the enema was given, apart from a little rectal discomfort. Following the enema she had retention of urine, which was relieved by catheterization, and two days later she complained of pain in the rectum. Pyrexia, which was attributed to the chest condition, continued. The pain in the rectum was regarded as being due to piles, there being no external evidences of any other cause. Eight days later catheterization was still necessary, and at that time the rectal pain, which had been relieved by a sedative ointment, became more severe. Faecal matter was noticed issuing from the vagina, and there was also incontinence of

faeces. The chest condition improved, but the temperature remained elevated (100°). When her doctor noticed the faecal vaginal discharge (ten days after the enema) he made a rectal examination, and was horrified to find no trace of the rectum, but instead his finger went into a huge cavity, limited behind by the coccyx and sacrum and in front by the posterior vaginal wall, in the distal part of which there was an opening of a size sufficient to admit the index finger. Dr. Allan asked me to see her in consultation that evening. The patient stated that she had had no rectal pain until a day or two after the administration of the enema. When questioned closely she admitted that the enema caused a slight pain, which she attributed to piles, from which she habitually suffered. As the pain did not persist she did not worry about it. She stated that for years she was accustomed to give herself enemata, as she preferred this to the use of purgatives. Her general condition was poor, and I considered that her best chance was to be nursed at home under the care of her own doctor until her chest condition improved sufficiently to warrant her removal to hospital.

On April 16, 1932, the patient was admitted to the David Elder Infirmary (annexe of the Western Infirmary) under my care. On her admission to the Infirmary it was noted that there was still considerable bronchitis and some embarrassment of respiration. She had retention of urine and a continuous oozing of foul-smelling faecal and purulent material from the vagina. Rectal and vaginal examination revealed an almost complete loss of the recto-vaginal septum and an absence of the posterior wall of the rectum. The examining finger came in close contact with the coccyx and the foramina in the lower part of the sacrum. Temperature, 98.8°; pulse, 92; respirations, 22. On April 22, 1932, a colostomy was performed. During the operation the lower peritoneal cavity was explored, but no abnormality was noted. The colostomy was opened two days later. Following the colostomy the patient made an uninterrupted recovery. The retention of urine was relieved within a day or two, and in fourteen days the recto-vaginal fistula had healed. The cavity behind the rectum discharged pus for several weeks, but ultimately it closed. The patient was discharged from the Infirmary on June 28, 1932, when it was noted that within the anus there was only a narrow track, which was lined by granulation tissue and which would not admit a finger.

The patient has reported from time to time, and when last seen a few weeks ago she appeared to be in good general health. She had no asthma or bronchitis, and the chest appeared healthy. There was still a small amount of discharge issuing from the anus, into which a finger could not be inserted. A sinus evidently existed between the end of the pelvic colon and the anus. She had good control of the colostomy wound, which functioned twice daily.

Other Cases

I was called in consultation to see this patient within a few weeks of reading an article by H. H. Rayner (*British Medical Journal*, 1932, **1**, 419), in which he described a case in many ways similar, but in which the injury was of less extent. I had meant to put this case on record at the time but thought that I should observe the patient for a year or two with a view to ascertaining the final condition following on the injury. At a meeting of the North of England Obstetrical and Gynaecological Society on December 17, 1929, W. W. King (Sheffield) reported a case, and subsequently, in the discussion which followed, four similar cases were mentioned by others (*British Medical Journal*, 1930, **1**, 113). These communications all referred to injuries caused by enemata immediately before or after labour. Denham Pinnock (*Lancet*, 1937, **1**, 205) refers to two cases similar to the one above described, but in his cases the injury was not so extensive or the history so peculiar.

The rigid douche or enema nozzle can hold such potential dangers that its use should never be permitted under any circumstances, and more especially in the hands of the patient, his friends, or even a nurse.

I desire to express indebtedness to Dr. W. D. Allan for his notes about the patient both before her admission and since her discharge from hospital.

Clinical Memoranda

Carcinoma of Rectum in a Youth of 18

The following case seems worthy of record by reason of the patient's age:

A youth aged 18 years consulted me in the late summer complaining of diarrhoea of sudden onset; there was no previous history of diarrhoea and a kaolin mixture was given. There was some improvement, and the medicine was repeated five days later. He was seen again nine days afterwards, the diarrhoea having recurred after transient improvement. The rectum was examined and a hard mass was felt three and a half inches from the anus, the tip of the finger slipping over the hard edge into a deep ulcer crater.

Laparotomy was performed that day. The liver was found to be free from secondary growths, but there was a hard mass the size of a walnut in the pelvic mesocolon one inch below the sacral promontory. There was a suspicion of a dimpling of the peritoneum covering the left side of this small mass. A left inguinal colostomy was performed, and the colon was opened on the third day. Ten days later under spinal anaesthesia an abdomino-perineal excision of the rectum was performed (Miles's technique). When the abdomen was opened the bladder was found to be full, in spite of the fact that the patient had passed water before coming to the theatre. Difficulty was experienced in catheterizing him because the growth was deforming the base of the bladder, which organ was pulled downwards and forwards in that region, presumably by contraction of surrounding tissues. The bladder was emptied by a silver catheter. The operation was completed by lining the large subperitoneal cavity with oiled silk and plugging with vaseline gauze, which was renewed on the fifth day and discontinued on the eighth day.

He was allowed home on the tenth day, the large cavity being irrigated daily with a pint of cold eusol. Walking was allowed on the twenty-third day; the perineum was completely healed eight weeks after operation; he was certified fit for work twelve weeks after operation.

Massive doses of iron (gtt. xii of ferri et ammon. cit. daily) were given and it was found that, not only did the patient gain strength rapidly, but the management of the colostomy was thereby facilitated in that the stools were well formed and had very little odour. All that was necessary was to cut a hole the size of the spur in a piece of lint which was laid on the abdomen; a vaseline piece of lint was laid on the spur. When he was dressed the formed stool had been deposited on the lint and the whole was removed and burnt forthwith. Very seldom was the skin of the abdominal wall soiled. The skin was kept in perfect condition by a zinc, boric, and french chalk dusting powder.

The pathologist's report proved the growth to be an adenocarcinoma. The hard mass in the pelvic mesocolon proved to be a lymphatic gland invaded by growth.

CONCLUSIONS

1. Before operation for excision of the rectum the bladder should be emptied by catheter.

2. During the nursing period the colostomy is best managed by giving large doses of the scale preparation of iron.

Longtown, Cumberland. R. RUTHERFORD.

Reviews

PRINCIPLES OF MEDICINE

Principles of Diagnosis, Prognosis, and Treatment. A Triology. By Robert Hutchison, M.D., LL.D., F.R.C.P. Second edition. (Pp. 53. 3s. 6d. net.) Bristol: J. Wright and Sons; London: Simpkin Marshall. 1937.

Medical Diagnosis. Some Clinical Aspects. By S. Levy Simpson, M.A., M.D., M.R.C.P. (Pp. 256. 10s. 6d. net.) London: H. K. Lewis and Co. 1937.

It is now nearly ten years since Dr. Robert Hutchison collected into a small volume his essays on the principles of diagnosis, prognosis, and treatment. With the lapse of time a new edition has been called for, but the author has found need for only minor corrections and alterations in a book which is packed with wisdom from the ripe experience of a learned physician interspersed with the dry humour of the North. It is perhaps caviare for the student, but practitioners will enjoy and benefit by its perusal, whether they are just beginning their professional career in a spirit of high hope, fresh from the schools with the latest information and most recent laboratory teaching, or resting for a moment from the whirl and exigencies of practice, or losing faith from weariness. For each there will be a stimulus in these wise words.

Dr. Hutchison's aphorisms on diagnosis are quoted with approval in a new book of the General Practice Series on the clinical aspects of medical diagnosis by his former student, Dr. Levy Simpson, and those who follow the principles laid down are bound to find much for which to thank both teacher and pupil. The value of an adequate history is emphasized; forbearance and tolerance while listening to the patient's recital are necessary, and give an opportunity for assessing the patient's make-up. Questions are often needed to keep the garrulous to the point or to encourage the diffident, but they must be put in such a way that suggestions of a false symptomatology are not implanted in the patient's or doctor's mind. The examination should be made with care and thoroughness. Perhaps the greatest difficulty is weighing the evidence. Here experience and judgement are needed to assess rightly the results of clinical and laboratory investigations. A further source of trouble is to determine the proportion of organic and functional elements in the case. A patient may reserve to himself the right to emphasize, even to exaggerate, a symptom in order that it may not be passed over. It is the doctor's duty to see that proper weight is given to it, seeing it in proper perspective, and catching out the malingerer. Dr. Levy Simpson has collected into systematic chapters the main diagnostic features of diseases of the cardiovascular, respiratory, digestive, and excretory organs. Under a convenient heading of the acute abdomen practitioners are instructed in the features of the medical, surgical, and gynaecological conditions which bring about an abdominal emergency. Diseases of the nervous system, blood, endocrine glands, joints, and the specific infectious diseases are sketched, and a short note is appended on the aspects of disease in children. Readers will find the descriptions clearly given, so that the elements of effective differential diagnosis are well set out.

BACTERIOLOGY FOR THE STUDENT

A Textbook of Medical Bacteriology. By R. W. Fairbrother, D.Sc., M.D., M.R.C.P. (Pp. 437; illustrated. 15s. net.) London: W. Heinemann. 1937.

In the present state of the medical curriculum ancillary subjects are given only a short time allowance in the clinical years, and the teaching must be of high standard if it is to retain the interest of the student and at the same time cover the ground adequately. The most sought-after textbooks are those which combine adequacy of content with brevity; there are limits to the demands which they can successfully make on either the mind or the purse. To produce a good book fulfilling these conditions is not easy, but Dr. R. W. Fairbrother has succeeded in this manual. Its outstanding merit is that the proper scope and functions of the science of bacteriology are recognized throughout; this is almost the same thing as to say that it affords sound teaching of general principles, which is more than can always be said of works of this size, or indeed of some larger ones.

Chapters on the general biology of micro-organisms and on the problems of infection and resistance occupy about one-third of the book, and the bulk of the remainder is descriptive, technique being dealt with in only a few of its aspects at the end. This, generally speaking, is as it should be; no properly taught student need *read* about details of technique. Nevertheless, in some chapters further directions on practical methods would form a useful addition; for example, there are no instructions for treating material containing tubercle bacilli preparatory to cultivation, a proceeding which is now quite commonplace. This criticism does not imply that the practical applications of bacteriology to clinical medicine are neglected; diagnostic and therapeutic measures are fully considered in relation to each infection. Exposition is clear, but to the student some passages will probably be obscure owing to the use of terms which have not previously been explained, and he will be well advised only to read some of the earlier chapters after studying the subjects of later ones. The only other criticism called for concerns the illustrations; of these there are too few in the descriptive section, four species alone being figured. The book obviously owes much to a well-known work on a larger scale, which it resembles in many ways; the author's indebtedness to this work is acknowledged.

THE TSETSE PROBLEM

Die Tsetsefliegen. Ihre Erkennungsmerkmale, Lebensweise und Bekampfung. Ein Leitfaden fur die Praxis. By Dr. F. Zumpt. (Pp. 149; 121 figures, 15 plates. RM. 9; geb., RM. 10.50.) Jena: G. Fischer. 1936.

This book deals with all aspects of the tsetse problem. The general morphology of the group receives fourteen pages and twenty-one text figures. Most of these figures are taken from earlier books; among them is one intended to represent the birth of a larva, and it actually shows the production of a small abortion. The notes on collecting which follow are intended to be understood by readers who have had no entomological training. The most important part of the book is the systematic section (sixty-four pages), in which the methods of identifying every species and subspecies of *Glossina* are described; good clear diagrams of the male and female genitalia accompany the text in all cases. The results of recent systematic studies in various countries are thus made readily accessible to those who work in tropical countries where no libraries are available. There are brief ecological notes for each species.

Fifty pages are devoted to general natural history or ecology, descriptions of technique used in research, and control methods. Though this information is up to date and clearly put, so that it forms a useful introduction to the subject, it is hardly detailed enough to be useful by itself to the field worker. However, anyone with experience of the tsetse literature will readily forgive a writer who errs on the side of brevity! Unfortunately Dr.

Zumpt appears to have little personal experience of control methods, so that in his condensed account he gives undue prominence to fly trapping (which fills half the space devoted to control), although that method now seems of doubtful value in most areas. The bibliography has about 650 references, almost all dealing directly with the tsetse fly.

ORTHOPAEDIC SURGERY

Recent Advances in Orthopaedic Surgery. By B. H. Burns, B.Ch., F.R.C.S., and V. H. Ellis, B.Ch., F.R.C.S. (Pp. 296; 108 figures. 15s.) London: J. and A. Churchill. 1937.

To write a book on recent advances in orthopaedic surgery is no easy task. There is not yet complete agreement as to what conditions are covered by this anachronistic term, and recovery from some of the lesions commonly dealt with is such a tedious business that by the time an innovation has by long trial been acknowledged as a real advance it can no longer be called recent. For the reason that "the treatment of fractures . . . would require a volume to itself," Mr. Burns and Mr. Ellis have wisely avoided this subject. It is clearly hard enough to cover the rest of the ground in a book of three hundred pages.

There is abundant evidence that the authors have not only read widely, but have assessed the merits of numerous so-called advances with considerable care, and their selection of material is, on the whole, excellent. The flavour of the book is unmistakably British (some may even accuse them of favouring London), but this is in no way blameworthy, since opinions based on personal observation must always be rated higher than those based on reading alone. Free use has been made of quotation and abstract from many papers, including useful contributions of their own, and in certain chapters, notably those on the shoulder and the spine, the result is most pleasing.

The opening chapters, on theories of bone growth, the principles of transplantation of bone, and the chemistry of bone, show that orthopaedic surgery has not only sought guidance from the work of the physiologist, but often has stimulated inquiry into problems that had never before been studied. The pity is that these chapters are so drastically condensed. Although there are still great gaps in our knowledge of the cellular processes in bone formation, and of the way in which calcium is moved about the body, the advances made in recent years are of fundamental importance. The physiology of muscle is not referred to, perhaps because the clinical application of much that is known is still so defective.

Bone tumours are dealt with very properly on the basis of the excellent work that has been done in America. The chapters on tuberculous disease of joints will commend themselves to almost all European surgeons, and the authors' preference for conservative treatment, with arthrodesis reserved merely for the stabilization of the healing lesion, is supported by excellent arguments. The erythrocyte sedimentation rate is mentioned as of value in assessing the progress of the disease: as this is a very recent advance it would have been wise to give the authority for this statement. A valiant attempt is made to deal with "painful shoulders"; Codman of Boston is the pioneer in this field, and good use is made of his recent work. This chapter, though not easy reading, is perhaps the best in the book. The dreariness of the discussion on "low back pain" is not so much the fault of the authors as of the inadequacy of our present knowledge of this mainly symptomatic group of complaints. By contrast, the sections dealing with adolescent kyphosis, spondylolisthesis, and Pott's disease are most encouraging; the advance on these fronts has been considerable during recent years.

It is, unfortunately, necessary to draw attention to lapses from the high standard that the authors have set themselves. Chronic (non-specific) arthritis is allowed only one page. "The diagnosis of proliferative arthritis is positively secured by tissue examination and the finding of focal collections of lymphocytes in the marrow and synovial membrane." True, no doubt; but there must be some easier way of doing it—and this is all we are told about diagnosis. The whole subject of chronic joint disease should have been reviewed; it would have meant increasing the size of the book, but its value would also have been enhanced. Here and there curious statements appear. Under acute osteomyelitis it is stated that "the discovery of lipuria may modify the treatment of the focus": no word of explanation follows. On page 204 we read: "The posture is maintained by muscular tone, and when this is caused by fatigue the strain . . . falls upon the ligaments." From the context it is possible to find out what is meant, but the sentence as it stands is nonsense. The illustrations, with two exceptions, are well done. But if Denis Browne's splint is so good (and we agree that it is), it should have been allowed several small photographs instead of two fourth-form drawings.

Nevertheless this is an excellent book, a worthy addition to Messrs. Churchill's now famous series. If, and only if, the reader has some previous knowledge of the subject, he will enjoy finding here a balanced and interesting account of the best of the recent work that has been done in this great branch of surgery. Orthopaedic surgeons of experience will learn at least a few things that they did not know before, and will no doubt find expressed a few opinions with which they violently disagree. The book deserves a wide circulation.

FACTORS IN SAFE CHILDBIRTH

Safe Childbirth: The Three Essentials. (1) Round Brim; (2) Flexible Joints; (3) Natural Posture. By Kathleen Olga Vaughan, M.B. (Pp. 150; 49 figures. 7s. 6d.) London: Baillière, Tindall and Cox. 1937.

Dr. Kathleen Vaughan's well-known interest in maternal welfare has led her to work for many years at the problem presented by the high maternal mortality in civilized countries. The outcome of this work is this interesting monograph, to which Dr. Howard Kelly, the veteran professor emeritus of gynaecology in the Johns Hopkins University, has written a foreword. Dr. Kelly sounds no uncertain note, for he speaks of the "enormous culpable losses . . . due to our utterly uncivilized treatment of expectant and parturient mothers."

Dr. Vaughan's thesis is that "civilized women have more difficult labours than the uncivilized" because civilized conditions of life, both European and Indian, lead to stiffening of the pelvic joints and flattening of the pelvic brim. In the primitive woman the pelvic brim is believed by the author to be always round, and the pelvic joints remain flexible as a result of hard physical work and an open-air life. The flattening of the pelvic brim occurs between the ages of 11 and 15, and converts the round outline seen in the child into the oval shape which has hitherto been regarded as a sex difference between the male and female pelvis, having its origin in foetal life. Incipient rickets is believed to play an important part in the change. Interesting arguments are adduced in support of this view, which appears to have been first suggested to the author by her experience among Indian women living under the Purdah system, and the native women of Kashmir.

In speaking of primitive races whose women have a round pelvic brim Dr. Vaughan says, "all these people bore their children safely in primitive conditions." As it stands this statement is too sweeping and is, of course, incapable of proof. A contrary instance from patriarchal times is that of Rachel, who died in giving birth to Benjamin after a "hard labour." The oval brim, in addition to causing prolonged suffering to the mother, endangers the child, and consequently "many of our finest children are squeezed to death." What hope, Dr. Vaughan asks, can there be of race improvement under such conditions?

The remedial measures advocated display great courage; they are primarily an open-air life and controlled physical exercises for all girls in childhood, so that the round brim may be preserved and the pelvic joints remain flexible. Secondarily, what is known as the usual obstetric position should be abandoned, and women should be delivered in the "squatting" position—that is, sitting on the heels—or in the kneeling position with the spine dorsiflexed and the arms extended. These postures are shown in a series of photographs of an attractive modern young woman who is not pregnant.

Dr. Vaughan's complete detachment from the point of view of the English mothers of the twentieth century is shown by the fact that she makes no mention of anaesthetics or analgesics in labour. Her outlook is one of sturdy independence, and for this she cannot be too highly commended.

BASAL NARCOSIS AND ANAESTHETIC COMPLICATIONS

On the Incidence of Anaesthetic Complications and their Relation to Basal Narcosis. By C. J. M. Dawkins, M.A., M.D., B.Chir., D.A. (Pp. 56. 3s. 6d. net.) London: John Murray. 1936.

The giving of an anaesthetic for a surgical procedure is unfortunately not without its risks. In this little volume Dr. Dawkins outlines the complications attendant upon anaesthesia, and discusses the part played by basal narcotics in their production. In doing so he has analysed three sets of figures. One set deals with his own personal cases and the other two are compiled from various hospital records. The first of these covers the years 1921–5, before basal narcotics were used, and the second group covers the period 1931–5, after their use had become established.

Dr. Dawkins has endeavoured to show that the giving of a basal narcotic before an anaesthetic definitely increases the risk of complications, and cannot therefore be regarded as an advance in anaesthesia. It is doubtful whether the majority of anaesthetists will agree with this rather pessimistic conclusion. Basal narcotics are still serving a useful purpose in allaying pre-operative fear, and will doubtless continue to do so. It is, however, good for all anaesthetists and surgeons to be reminded of the pitfalls connected with their labours, and herein lies this book's chief merit. Dr. Joseph Blomfield has contributed a short foreword.

Notes on Books

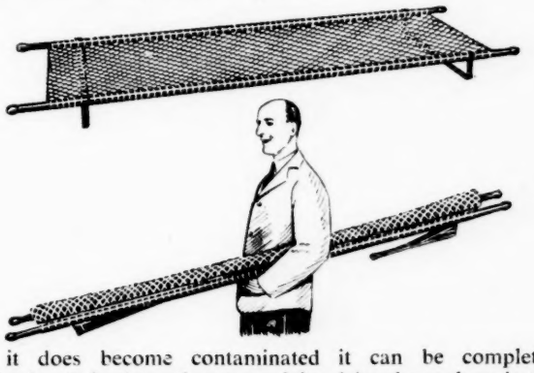
A Crab Was Crushed is the apposite title chosen by HARVEY GRAHAM for a novel based upon cancer research (Rich and Cowan, 7s. 6d.). The plot is highly original, and the tenuous love interest is completely subordinated to the excitement and vicissitudes of the scientific quest. The author succeeds in presenting his characters and their setting in a remarkably lifelike way, and he gives an excellent description of the daily routine in a large provincial teaching hospital, which many medical readers will think they can identify. The book, although it abounds in medical and scientific terms, is presumably written for the laity, and it will convey to them some idea of the widespread ramifications of patient labour, upon which successful research must depend. It will also open their eyes to the very real danger of indiscriminate addiction to potent proprietary drugs. The novel ends on a dramatic note, and may be described as a scientific thriller.

Physic and Fancy, by Dr. CHRISTOPHER HOWARD (Hutchinson, 6s.), is a series of sophisticated comments and observations described as "thoughts, philosophy, and medical facts from a physician's notebook." The author confesses that he has only been in practice for ten years, and it is therefore surprising to note his confident dogmatism on medical matters. Nevertheless the book shows evidence of wisdom and common sense, and it is obvious that the author forms his own judgements, uninfluenced by textbooks or preconceived ideas. Anaesthesia, religion, diet, cosmetics—Dr. Howard is ready to give an opinion on any of them, and on a host of other subjects. He disapproves of the modern trend of cosmetics and feminine adornment, and cites nipple rings as almost the only ornaments of a past age which have not yet recaptured popularity. This is an amusing and clever book, though perhaps a little too consciously clever.

Preparations and Appliances

A METAL STRETCHER

A disadvantage of the ordinary stretcher of wood and canvas, to which attention has been drawn recently, is that it readily absorbs poison gases of the mustard type and if thus contaminated becomes a source of grave danger. The "Clyde-built" stretcher is made entirely of metal and will not readily be contaminated by fluids or gases.



If it does become contaminated it can be completely sterilized. A further advantage claimed by the makers is that it can be stored indefinitely in any dry place without deteriorating. Its weight does not exceed that of a standard wooden stretcher. Particulars and prices may be obtained from the makers, Cockburn and Co., Ltd., 130, Howard Street, Glasgow, C.1.

SURGICAL HOSE

Elastic stockings have long had some place as auxiliaries in the treatment of varicose veins. "Academic" surgical hose is made with "lastex" yarn, which gives what is commonly described as a two-way stretch. These stockings have in addition a patented heel which compares favourably with the old type of elastic stocking, in which the heel was cut away completely, in giving a fixed point from which a uniform tension can be exerted. The stockings are seamless and washable, and are made in two styles—full length and knee length, and three sizes—small, medium, and large. The stockings can if necessary be made to special measurements at a slightly increased cost. Inquiries should be addressed to the "Academic Depot," Mappin House, 158-162, Oxford Street, W.1.

THE FIGHT AGAINST LEPROSY

The report for 1936 of the British Empire Leprosy Relief Association states that the policy of this body, which was originally concentrated upon the treatment of the disease, is now mainly directed towards effective isolation, and more especially to the safeguarding of young children from contact with infective lepers. Another important objective is the education of the community with a view to improving their sanitary and general condition. Although in many countries voluntary isolation has long been carried out in accordance with tribal custom, it is the harmless crippled cases who are isolated, while the infectious cases mix with the populace, including the children, who are particularly susceptible to infection. It is the object of the anti-leprosy worker first to gain the confidence of the people, then to study their customs with regard to leprosy, and finally to amend such customs so that they may effectively control the disease. The report states that the chief hope of the ultimate eradication of leprosy lies in educating the people at large in the nature of the disease and in the means of prevention, using the leper settlements as centres of such education and training. By these means the people may be made leprosy-conscious, so that they will themselves insist on the isolation of dangerous lepers and on the observance of preventive measures.

With the collaboration of Toc H the Association has sent several volunteers to Nigeria to work on these lines. More men are urgently required, but the necessary funds are not at present available. In the early part of the year Dr. Ernest Muir, medical secretary of the Association, visited Nigeria, the Gold Coast, and Sierra Leone to study the leprosy problems of these colonies at first hand and to make suggestions for further development of anti-leprosy work. Since it is estimated that there are some 200,000 lepers among the twenty million inhabitants of Nigeria the problem of effective isolation is naturally one of considerable difficulty. A more extensive formation of clan settlements, already successfully established in some districts, is advocated, in addition to educative campaigns in the villages, accompanied by the provision of treatment centres.

Objectives of the Campaign

The annual general meeting of the Association was held at the India Office on April 15 with Viscount Halifax, the president, in the chair. Following a general survey of the year's work by Sir William Peel, chairman of the Executive Committee, the meeting was addressed by Dr. Muir, who discussed the objectives of the Association. He arranged these under four heads: (1) the study of leprosy and of the conditions under which it exists and spreads; (2) helping the leper by care, treatment, and training; (3) combating leprosy with a view to its final control; (4) interesting, rousing, and educating the British public in the problem of leprosy.

Dr. Muir said that leprosy must be considered largely as a child problem, for those infected in early years furnished most of the severe and infectious cases which spread the disease to the next generation. From the therapeutic point of view, although medicines were useful, the main remedy lay in healthy occupation and sound nutrition. To succeed in effective treatment and in limitation of infection the lepers themselves must co-operate, and to attain this end devoted personal service was needed. With this co-operation secured intelligent patients could be trained in well-equipped and well-staffed settlements during their treatment, so that on recovery they could actively assist in the anti-leprosy campaign in the villages.

In conclusion Dr. Muir stressed the need for more support from the British public. Interest had been stimulated by the Leprosy Exhibition, which was shown at eleven centres during the year, and it was hoped to form new branches of the Association in Manchester and other Northern cities. Leprosy was a problem of Colonial development, and it was incumbent upon the British nation, which had undertaken responsibility for the backward races inhabiting certain of its over-seas dependencies, to make every effort to control and eventually eliminate a disease which caused widespread suffering and distress among these people.

Sir William Peel, moving the adoption of the annual report, said that the Association met that day for the first time as an incorporated body—a company limited by guarantee. Lord Halifax announced that the King had become Patron of the Association, thus showing his interest in, and approval of, its work.

BRITISH EMPIRE CANCER CAMPAIGN

In the absence of Viscount Hailsham, Sir Cuthbert Wallace, President of the Royal College of Surgeons of England, presided at the quarterly meeting of the Grand Council of the British Empire Cancer Campaign held on April 12.

The council was informed that the Campaign would move into its new offices at 11, Grosvenor Crescent, next door to the present offices, on May 1. The following grants, totalling £2,900, were made, in addition to the bulk grants of last November and January: £1,000 to be placed at the disposal of Dr. F. Dickens, director of research of the North of England Branch of the Campaign at Newcastle, for the continuation of the special "short-wave" investigations being carried out under his direction on behalf of the Scientific Advisory Committee at headquarters; £1,200 for the purchase of a plaque of radium in use by Dr. F. G. Spear at the Strangeways Research Laboratory, Cambridge; an additional grant of £300 for the year 1937 to the Westminster Hospital; an additional sum of £300 to Mr. F. C. Pybus for the salaries of his assistants and expenses during the second half of 1937; and a grant of £100 to Dr. L. H. Gray, at Mount Vernon Hospital, in connexion with the neutron investigations.

Grand Council unanimously ratified the scheme for close collaboration between the autonomous branches of the Campaign and headquarters—namely, the North of England Council, the Yorkshire Council, the Birmingham Council, and the Lancashire, Cheshire, and North Wales Council. It was reported that the fourth biennial informal conference of research workers, surgeons, physicians, and radiologists had been a great success, and the confidential sessions had been attended by over 400. Sir James Walton, K.C.V.O., F.R.C.S., was elected a member of Grand Council.

J. L. Dorsey (*Ann. intern. Med.*, November, 1936, p. 628) maintains that the first requisite in the cure of the tobacco habit is that the patient, whether for medical, financial, aesthetic, or other reasons, should *want* to stop the use of tobacco in any form. To lessen the symptoms of deprivation he made use of lobelia or Indian tobacco, which closely resembles nicotine in its effects upon the nervous system. Of the five alkaloids contained in lobelia the chief is lobeline, which, like nicotine, causes a brief stimulation of the motor centres in the spinal cord and medulla followed by depression and later paralysis. The symptoms of poisoning resemble those of nicotine poisoning—namely, nausea, giddiness, fainting, vomiting, and cold sweats. The first dose of lobeline sulphate, 1/8 grain, is given by mouth in capsule form immediately after the midday meal, when the use of tobacco is abruptly stopped. The second dose is repeated whenever the patient feels the urge to smoke. It has not been necessary to use more than eighteen doses in twenty-four hours, and often three or four are sufficient. A week of gradually lessening use of lobeline has been sufficient in most cases. After the first dose of lobeline the desire to smoke becomes less and less insistent. For a day or two there may be nausea, a metallic taste, and a feeling of malaise, but no other symptoms. In the great majority of Dorsey's cases there was no comparison between the uneasiness of stopping the tobacco habit without lobeline and when the drug was used as a buffer.

A STUDY OF THE TREND OF MORTALITY RATES IN URBAN COMMUNITIES OF ENGLAND AND WALES

WITH SPECIAL REFERENCE TO DEPRESSED AREAS

BY

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In a report shortly to be published by the Ministry of Health the problem of the relation of the economic depression of 1928–33 to the death rate of the population of the depressed areas has been minutely examined. In view of the possibility of some delay in publication it has been suggested that a short summary of the investigation—indicating briefly the method of approach, the principal results, and the main evidence which forms the basis of the conclusions—might be of general interest. For detailed analysis the reader is referred to the complete report when published.

Mortality statistics derived from the publications of the General Register Office, whatever their limitations, still remain the best index of the health of the general population we possess. They were therefore used in this study, the main object of which was to determine whether in the depressed areas the years of depression could be shown to have exerted a deleterious effect on the mortality experience, demonstrable by establishing the existence either of a greater excess in their death rates over those of the country as a whole than was recorded in years previous to the depression, or of a slower rate of decline since the depression began than has been apparent in other and more prosperous parts of the country.

Two methods of approach to the problem were adopted: comparison of (*a*) standardized death rates of all causes of death for the three triennial periods 1911–13, 1920–2, and 1930–2, and (*b*) of annual death rates in specific age groups from 1911 to 1934, with similar rates for certain towns in the country less severely affected by the depression and with the rates for England and Wales as a whole. The analysis of annual death rates was restricted to towns where no changes in boundary had occurred throughout the period.

My definition of the depressed areas is that generally adopted—namely, for England, the counties and county boroughs of Lancashire, Cheshire, Northumberland, and Durham; and for South Wales the counties and county boroughs of Glamorgan, Monmouth, Brecknockshire, and Carmarthenshire.

In making a selection of prosperous county boroughs I had recourse to a list of unemployment rates which, calculated for other purposes from data provided by the Ministry of Labour, related in all to sixty-eight county boroughs from all parts of the country, depressed as well as prosperous. These unemployment rates were for the triennium 1927–9 and referred to males only. From this list I first excluded all north of Lincoln and also seaside and holiday resorts; from the remainder I selected those whose unemployment rate was below the mean of the sixty-eight boroughs. In addition, I have included the administrative county of London.

Standardized Mortality Rates, 1911-13, 1920-2, 1930-2

These rates are given for each of the northern counties and for the four Welsh counties as a whole in Table I. They show progressive decline in each successive triennium. Similar rates (omitted here) were calculated for every county borough within these areas, and with but two exceptions (where the 1920–2 rate was the lowest) the same feature was apparent.

Rates calculated in precisely the same manner but relating to the prosperous group of towns are given in Table II, and in this group, as in the depressed areas, mortality has declined during the last two decades in every case examined. In each county borough, for both sexes, the standardized rates show a fall in 1920-2 and another fall in 1930-2. Thus absolute rates of mortality declined progressively from 1911–13 without serious check by reason of the economic depression.

TABLE I.—*All Causes. Standardized Death Rates per 1,000*

	Males			Females		
	1911-13	1920-2	1930-2	1911-13	1920-2	1930-2
England and Wales ..	15.08	12.84	11.01	12.49	10.50	8.78
County of Lancashire* ..	18.85	15.58	13.20	15.61	12.71	10.50
County of Cheshire* ..	15.82	12.99	11.16	12.82	10.57	8.65
County of Northumberland*	16.18	14.70	12.03	14.13	11.12	9.91
County of Durham* ..	17.44	15.70	12.96	15.41	13.61	10.98
South Wales†	15.84	13.67	12.00	13.93	11.88	10.20

* Administrative county together with associated county boroughs.
† Geographical counties of Brecknock, Carmarthen, Glamorgan, and Monmouth.

TABLE II.—*Showing the Standardized Rates of Mortality per 1,000 for certain County Boroughs outside the Depressed Areas*

District	Males			Females		
	1911-13	1920-2	1930-2	1911-13	1920-2	1930-2
England and Wales ..	15.08	12.84	11.01	12.49	10.50	8.78
Bath	11.85	10.93	9.11	8.30	7.75	6.74
Birmingham	15.66	13.75	11.59	13.00	10.78	8.91
Canterbury	12.83	9.87	9.24	10.28	8.71	7.45
Coventry	14.82	11.92	11.12	12.90	9.60	8.66
Derby	14.16	12.08	10.90	12.25	9.72	8.71
Exeter	15.02	11.81	10.52	12.51	10.23	7.10
Gloucester	14.43	12.11	10.40	11.77	10.85	8.86
Ipswich	14.73	10.91	9.32	11.52	9.75	8.05
Leicester	15.42	13.67	11.23	12.67	11.23	8.83
Lincoln	14.55	13.17	10.33	11.99	9.52	8.74
Northampton	14.01	11.96	9.84	11.79	8.83	8.51
Norwich	14.32	11.91	9.67	11.36	9.69	7.58
Nottingham	16.69	14.16	12.55	14.09	11.64	9.62
Oxford	12.74	10.35	9.09	9.45	8.20	7.35
Reading	13.75	10.76	9.75	11.07	8.74	7.74
Worcester	14.15	12.40	11.30	11.77	9.40	8.66
London	16.30	14.11	11.71	12.76	11.02	8.71

But while in the depressed areas in only three out of thirty-two boroughs was the rate *lower* than that of England and Wales in *any* of the three periods examined, in the prosperous group only three out of seventeen show mortality *higher* than that of England and Wales for both sexes at each of the triennial periods, and even in these the amount of excess is slight compared with that experienced by the boroughs in the depressed districts. This is seen by reference to Tables III and IV, in which the rates for every county and county borough examined are expressed as percentages of the rate for England and Wales.

From Table III it is also seen that in only two (Lancashire and Durham) out of the five geographical counties can the death rate in 1930–2 be said to have been approximately 20 per cent. higher than that of the whole country. The three remaining depressed districts show much less excess. Furthermore, Lancashire and Cheshire were both in a better position relative to England and Wales in 1930–2 than they were in 1911–13. If the country as a whole has improved from the point of mortality, as we know it has, those two counties have improved to a still greater extent. In the other three districts the relative improvement has not quite kept level with that in England and Wales, since in each there was 2 or 3 per cent. more excess in 1930–2 than existed in 1911–13.

Thus whilst it is true that the depressed areas have death rates in excess of England and Wales it is not true

that this excess is a consequence of the post-war depression of 1928–33. On the contrary, it appears that these counties have in the last twenty years kept pace with the country as a whole as regards the decline in general mortality. The excess has been in existence for at least the last twenty years and has been nearly constant.

TABLE III.—*Standardized Death Rates from all Causes for certain Depressed Districts expressed as a percentage of the Standardized Death Rate of England and Wales*

	Males			Females		
	1911-13	1920-2	1930-2	1911-13	1920-2	1930-2
England and Wales ..	100	100	100	100	100	100
County of Lancashire* ..	125	121	120	125	121	120
Barrow-in-Furness ..	111	105	111	112	101	110
Blackburn	122	125	110	124	124	117
Bolton	125	121	114	124	125	119
Bootle	140	127	133	137	127	133
Blackpool	107	76	107	100	77	99
Burnley	131	137	115	141	138	121
Bury	118	122	112	116	118	120
Liverpool	144	137	135	142	134	129
Manchester	134	131	129	128	125	123
Oldham	136	137	127	134	137	132
Preston	134	123	123	134	126	122
Rochdale	120	123	120	123	128	124
St. Helens	139	127	124	146	129	124
Southport	79	91	97	72	79	95
Salford	135	131	138	132	130	132
Warrington	122	118	129	128	117	123
Wigan	144	140	135	147	143	145
County of Cheshire* ..	105	101	101	103	101	99
Birkenhead	120	118	118	113	115	115
Chester, City of	114	115	127	108	109	109
Stockport	124	116	115	122	113	109
Wallasey	created 1/4/13	94	96	created 1/4/13	94	87
County of Northumberland*	107	114	109	113	106	113
Newcastle-on-Tyne ..	121	131	123	120	130	121
Tynemouth	116	128	115	124	121	113
County of Durham* ..	116	122	118	123	130	125
Darlington	created 1/5/15	115	104	created 1/5/15	110	107
Gateshead	120	133	126	124	138	135
West Hartlepool	121	131	128	125	127	117
South Shields	134	140	138	132	141	138
Sunderland	128	138	132	128	136	135
South Wales†	106	107	109	113	114	116
Merthyr Tydfil	114	118	123	126	128	145
Newport	104	108	111	107	110	110
Swansea	114	110	107	119	109	112
Cardiff	111	114	113	109	109	107

* Administrative county together with associated county boroughs.
† Geographical counties of Brecknock, Carmarthen, Glamorgan, and Monmouth.

Transferring attention from the counties as a whole to individual county boroughs, it may be briefly mentioned here that the exceptionally favourable position of Blackpool, Southport, and Wallasey is shown in the report to be due mainly to the fact that they are better-class residential areas than other boroughs in the depressed areas. Omitting these, therefore, it is found that out of the remaining twenty-nine boroughs there was greater excess male mortality in 1930–2 than in 1911–13 in ten cases and of female mortality in ten cases also. But the excess of mortality in 1930–2 was greater than that of 1920–2 in only seven cases as regards either male or female mortality.

Even among the prosperous county boroughs of the South places can also be found whose position relative to England and Wales with regard to mortality has worsened (see Table IV).

Generally it may be said that in 1911–13 the boroughs of Lancashire had the highest male mortality, which was 44 per cent. in excess in Liverpool and Wigan. The tendency appears to have been for Lancashire to improve relatively, its place being taken by Durham. The highest male mortality in 1930–2 is found in South Shields, bracketed with Salford with 38 per cent. excess.

As regards female mortality, the most noteworthy point is the case of Merthyr Tydfil with 26 per cent. excess in 1911–13, 28 per cent. in 1920–2, but increased to 45 per cent. excess in 1930–2. Detailed analysis of this increase shows it to be due to increase in tuberculosis of the respiratory system, and of "other tuberculosis," to an increase in heart disease at ages 5 to 24 (particularly at ages 15 to 24), and to an epidemic of diphtheria, which in 1929–30 caused an increase in deaths of children between ages 5 and 14. I give evidence in my complete report in favour of the view that the increase in the rate of mortality from tuberculosis among females in Merthyr Tydfil is due to emigration of healthy young adult females between ages 15 and 24, with the result that on the average the weaker lives are left behind and the death rate increases.

TABLE IV.—*Showing the Standardized Rates of Mortality per 1,000 for certain County Boroughs outside the Depressed Areas, expressed as a percentage of the Standardized Rates of England and Wales*

District	Males			Females		
	1911-13	1920-2	1930-2	1911-13	1920-2	1930-2
England and Wales ..	100	100	100	100	100	100
Bath	79	85	83	66	74	77
Birmingham	104	107	105	104	103	101
Canterbury	85	77	84	82	83	85
Coventry	98	93	101	103	91	99
Derby	94	94	99	98	93	99
Exeter	100	92	96	100	97	81
Gloucester	96	94	94	94	103	101
Ipswich	98	85	85	92	93	92
Leicester	102	106	102	101	107	101
Lincoln	96	103	94	96	91	100
Northampton	93	93	89	94	84	97
Norwich	95	93	88	91	82	96
Nottingham	111	110	114	113	111	110
Oxford	84	81	83	76	78	84
Reading	91	84	89	89	83	88
Worcester	94	97	103	94	90	99
London	108	110	106	102	105	99

Annual Death Rates in Age Groups, 1911-34

The analysis in this section was limited to the following groups of county boroughs, these having experienced no changes in boundary during the period examined:

Northern Group + South Wales (Depressed Areas)		Southern Group (Prosperous Areas)
Bolton Oldham Salford Wigan	Principally textile	Gloucester Leicester Norwich Nottingham Ipswich London (Administrative County)
Bootle Newcastle Tynemouth West Hartlepool	Shipping and heavy industries	
Merthyr Tydfil Newport	Coal mining and steel smelting	

Annual death rates from all causes of death, in ages 0–4, 5–14, 15–24, 25–44, 45–64, and over 65, were calculated for each of these groups for the years 1911–34, and compared with similar rates for England and Wales. It was evident that the only satisfactory means by which the salient points of such a mass of data could be made apparent was graphical representation on logarithmic scales. For the purpose of this article it must suffice to

note the principal deductions which were made from the diagrammatic comparison.

Over the period 1911–34 the general rate of mortality in England and Wales steadily declined, the fall being greatest at ages 0–4. At age group 5–14 the fall was not so great, at 15–24 it was very slight indeed, and at 25–44 somewhat faster again. At ages 45–64 a sudden fall occurred during the war years, the rates for some years before the war and since the war being roughly stationary. At ages over 65 the same phenomenon occurs, but the difference between the pre-war level and the post-war level is very much less in the older age groups.

With the exception of the Welsh group the graphs show that both in the depressed and in the prosperous areas the trend of mortality has been one of decline in proportion to the relation which each group bore to England and Wales in the years immediately preceding the war. The amount of excess or deficiency in mortality varies between the groups, but is roughly constant for each group throughout the period. South Wales is differentiated in that its mortality, which was but little in excess of the average before the war, increased in most age groups and remained stationary in others. Particularly is this true of female mortality. Thus the trend of mortality there has been upward and its position relative to England and Wales decidedly worse at the end of the period.

In the textile and heavy industry groups in the depressed areas excess mortality prevailed for both sexes at every age group throughout the period, but in South Wales only since the war. In the prosperous towns mortality has been roughly at the level of England and Wales as a whole. London can be classed with the prosperous group except at ages 25–44 and 45–64, where male mortality is found to have been consistently in excess of the general level.

Finally I combined all the counties and county boroughs of the depressed areas and calculated death rates in broad age groups for this aggregate depressed area for the three triennial periods 1911–13, 1920–2, and 1930–2, and compared the rates so found with the rates of England and Wales in the same age groups and for the same periods. The figures are given in Table V.

Broadly speaking the figures for 1930–2 show that in those years the excess mortality was greatest at the youngest age group, and also that among adult females the excess was greater than among males. But when attention is turned to the earlier triennia it becomes clear that the excess mortality in 1930–2 cannot be associated with the economic depression of that time. The two earlier periods show precisely the same type of relationship. At ages 0–14 the mortality of males in the depressed areas was 23 per cent. above the rates of England and Wales at both 1911–13 and 1920–2, falling to 22 per cent. in 1930–2, whilst for females the figures are 24, 22, and 21 per cent. in excess. With the exception of age group 15–44 it will be noted that the percentage for both males and females was slightly lower in 1930–2 than it was in 1911–13. The death rate in the depressed areas has fallen at a slightly slower rate at these ages than that of England and Wales as a whole. In the former the rates of 1930–2 were 77 and 78 per cent. of the 1911–13 figures for males and females respectively; in the country as a whole they were 75 and 77 per cent. It follows that the very slight deterioration in the relative position at these ages is due to a somewhat smaller fall in the rate of mortality in the depressed areas than occurred in England and Wales as a whole. This is the sole piece of evidence I can find in support of the view that there was a worsening of the position of the depressed areas in the years of the depression.

The greater excess mortality at the adult ages among females than among males is yet another phenomenon which, though present in the depressed period, is found to have occurred at 1920–2 and 1911–13, and presumably has been present consistently throughout the period.

TABLE V.—*Showing the Death Rates in Age Groups in the Depressed Areas expressed as a percentage of the Death Rates of England and Wales*

Age Group	1911-13			1920-2			1930-2		
	Death Rate in Depressed Areas per 1,000	Death Rate in England and Wales per 1,000	Percentage of England and Wales	Death Rate in Depressed Areas per 1,000	Death Rate in England and Wales per 1,000	Percentage of England and Wales	Death Rate in Depressed Areas per 1,000	Death Rate in England and Wales per 1,000	Percentage of England and Wales
Males:									
0–14	19.81	16.12	123	14.82	12.08	123	9.81	8.05	122
15–44	5.72	5.16	111	5.24	4.69	112	4.40	3.85	114
45–64	24.56	21.04	117	19.48	16.98	115	18.35	16.53	111
65+	96.88	87.62	111	86.75	79.74	109	86.39	80.63	107
All Ages ..	16.40	14.99	109	14.29	13.31	107	13.47	12.71	106
Females:									
0–14	16.95	13.67	124	12.11	9.92	122	7.87	6.49	121
15–44	5.00	4.32	116	4.59	3.98	115	3.90	3.33	117
45–64	19.64	16.16	122	15.22	12.89	118	13.75	11.97	115
65+	84.38	76.23	111	77.77	69.66	112	74.65	68.39	109
All Ages ..	14.48	13.16	110	12.39	11.60	107	11.74	11.24	104

These results, it would seem, must lead to the conclusion that there is no evidence from the trend of mortality rates from all causes of death that the health of the population of the distressed areas has been unfavourably affected by the economic depression. Excessive mortality these areas certainly have, but this excess is not peculiar to the years of the depression. It has been a consistent feature of their mortality experience for at least the past twenty years.

Whilst on the one hand we may be inclined to regard this as a matter for congratulation, let us not overlook the fact that my analysis shows that we are concerned with a more deeply rooted evil, possibly involving genuine geographical and racial factors. The existence of evil conditions is not mitigated by reason of their having always been evil.

The preliminary programme of the Health Congress, to be held at Birmingham from July 12 to 17 by the Royal Sanitary Institute, has now been issued. The list of subjects to be discussed includes the development of the maternity service, care of the pre-school child, physical education, incapacitating sickness, health education, housing progress and prospects, safeguarding of bulk milk, and the value of medical services to industry. Lord Dudley is president of the congress, and the Minister of Health will address a general session.

WHAT IS OSTEOPATHY?

A FRANK ANALYSIS

Dr. Charles Hill and Dr. H. A. Clegg ask, in the title of their book, "What is Osteopathy?"[1] but after an entertaining and informative analysis really find themselves unable to answer the question. Indeed it cannot be answered. Sincere osteopaths, like sincere homoeopaths, find themselves in the thrall of a declaration of faith, delivered once for all. Though they realize that in science the old shibboleths have constantly to be revised in the light of new discoveries, they feel, if they utter heresies against the creed of Still or of Hahnemann, as a Jesuit would on renouncing the vows of his order. They carry religious fervour into the cool atmosphere of science, with the result that the outsider reading their writings finds himself in a world compared with which Cloud Cuckoo Land or the land Through the Looking-glass seems solid ground indeed. Still believed in such things as a "poisonous gas" theory of infectious disease, in spontaneous generation, in honey for diabetes, and in treating meningitis by half-pint doses of whisky. Since the prime tenet of the faith is that the body contains everything necessary to its own cure, why the whisky? He said: "No system of allopathy, with its fatal drugs, should ever be permitted to enter our doors. . . . When other methods are brought in just that much of osteopathy must move out." Yale Castlio says: "It has never been found necessary to retract in the slightest degree from [this] original creed." Yet he describes antiseptics, anaesthetics, stimulants, sedatives, anodynes, cathartics, and narcotics as "useful or indispensable." E. J. Conley, writing in 1935, said that Still "never expected his followers to prostitute his discovery by making it a tail to any other therapeutic project." Yet Dr. Kelman Macdonald, who may be regarded as the most distinguished and reasonable of British osteopaths, admits that he would recommend insulin, adrenaline, parathormone, and liver extract, though "our views are all at complete variance with those of the medical school." He discards Still's teaching of the displaced bone as a "delightfully simple but utterly erroneous hypothesis," but he believes that typhoid fever only attacks the osteopathically unsound, while admitting that "we have no evidence whatever" for that belief. It must be difficult to try to be a modernist and a fundamentalist at the same time.

Mr. Streeter says that the osteopathic lesion is a name given to any structural derangement, no matter how small or where found in the body; in that case why "osteopathic"? Our authors summarize the various views which have been expressed as to the nature of the lesion thus: "It has in its time played many parts; a dislocated hip, a twisted rib, a dislocated spine, a contracted muscle, a fixed joint, a strained joint. It presses and it does not press. It is swollen and it is contracted. It can be demonstrated by *x* rays and it cannot be so demonstrated. It has been seen post mortem, and it has not been seen post mortem."

So long as the theory of osteopathy remained a faith it was secure. But when challenged it appealed to the Caesar of the experimental method—and with disastrous results. It is always dangerous to start on research with preconceived notions as to what is going to be found. It is still more dangerous when the observer does not know the difference between the anterior and posterior horns of the spinal cord (p. 94), describes non-existent lateral ligaments of the spine (p. 104) and a thirteenth thoracic vertebra (p. 109), thinks that carbonates exist as such in the blood, and that carbon dioxide is an important factor in increasing the alkalinity of the blood (p. 96). I have read the *Bulletins* of the A. T. Still Research Institute, and agree with Drs. Hill and Clegg that "if any medical man carried out research in such a way he would find it impossible to get his results published in a decent medical journal." Nay more, he would quite rightly be refused a licence by the Home Office for carrying out such experiments on animals. Partial dislocations of the spine leading to severe surgical shock were produced without an anaesthetic. It is interesting to note that osteopathic treatment was of no avail in restoring the animal to health. This does not afford much support for osteopathy as a treatment for a demonstrable osteopathic lesion!

A reading of these *Bulletins* reminds one of the passage in Anatole France's *Penguin Island* in which he burlesques the Dreyfus trial. As it had been objected that there were no proofs, literally cartloads of documents poured into the War Office. The Minister for War shook his head: "We were safe as long as there were no proofs." He knew that proofs such as these condemned themselves.

It may well be asked if the theory of osteopathy rests on such unsound foundations how can its practical successes be explained. That is not difficult. Some of Sydenham's theories were fantastic, but his clinical observations were sound. In the past absurd explanations have been given of the mode of action of drugs which had been empirically proved to do good. But we have no subconscious sense of guilt in accepting the observations while discarding the explanations, since we are bound by no creed except the search for truth. Osteopathic manipulation may certainly do good in some conditions, where (as Wharton Hood put it) muscles, tendons, or even articular extremities are tied down. And it cannot be denied that the medical profession, influenced perhaps by Hilton's classic *Rest and Pain*, were unduly slow to recognize that fact. Secondly, a successful osteopath is often a shrewd judge of character. I knew a lady who derived great benefit from an osteopath because while he pummelled her back vigorously he poured out a stream of home truths from which she could not escape. Each session ended in tears and protests that she had been insulted. But she continued the treatment!

This book can be cordially recommended to all who wish to know the facts about osteopathy, clearly stated and well documented. The authors' conclusion is that "if the osteopath restricted his therapeutic claims [to manipulative surgery] . . . and did not attempt to erect a new theory of health and disease on an imaginary pathology and unproved hypotheses, the medical profession would have no excuse for not listening to him." But they point out the necessity for accurate diagnosis in order to avoid the disasters resulting from manipulation, say, of a tuberculous knee or of the spine for cancer of the breast. As to the training necessary to avoid such disasters the conclusion of the Select Committee of the House of Lords may be quoted: "The claim of the osteopaths to treat all diseases . . . has not been established, and it would not be safe or proper for Parliament to recognize osteopathic practitioners as qualified . . . to diagnose and treat all human complaints. . . . The only existing establishment in this country for the education and examination of osteopaths was exposed in the course of evidence before us as being of negligible importance, inefficient for its purpose, and above all in thoroughly dishonest hands." So an appeal to another kind of Caesar met with no better fate.

Mr. H. G. Wells contributes a preface in which he sums up the whole position with characteristic directness and lucidity. While recommending the medical profession to adopt as speedily as possible whatever good there is in manipulative healing, he says, "There can be little doubt that the creation of such an alternative 'school of healing' duly recognized and incorporated would . . . flavour the general discussion of health with much . . . obscurantism, sectarianism, and bitterness."

W. LANGDON-BROWN.

[1] *What is Osteopathy?* By Charles Hill, M.A., M.D., D.P.H., Deputy Medical Secretary, British Medical Association, and H. A. Clegg, M.A., M.B., M.R.C.P., Deputy Editor, *British Medical Journal*. Preface by H. G. Wells. (Pp. 217; illustrated. 7s. 6d. net.) London: J. M. Dent and Sons. 1937.

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CALCIUM REQUIREMENTS IN MAN

It is so often suggested in nutrition surveys that calcium intakes are below the optimum that a recent review of the calcium requirements of man by Dr. I. Leitch of the Imperial Bureau of Animal Nutrition[1] is of great interest. He calculates that the maintenance requirement of adults is 0.55 gramme daily. Sherman, whose figures have been very generally used in the past, put the equivalent figure at 0.45 gramme. Both these figures are maintenance requirements and exclude the additional health allowance which is advisable. It has been shown by Sherman in America and Orr in this country that many diets do not even reach the figure of 0.45 gramme. Leitch enters into some interesting speculations as to the possibility of senile osteoporosis being due to deficient calcium intake. In his estimates of the requirements at different age periods the most striking feature is the high requirement in adolescence, increasing up to 2 grammes between the years 15 and 16. Assuming that milk provides two-thirds of the calcium intake, this means that children at the age of 16 need two pints of milk a day.

An interesting section is devoted to the calcium supplied to the infant in breast milk. Leitch brings forward evidence that breast milk is often qualitatively and quantitatively inadequate as a source of calcium for the infant. Qualitatively in the figures he quotes from various authorities there is a range from a minimum of 0.126 to a maximum of 0.717 gramme per litre of breast milk. On the quantitative side numerous experiments are quoted which indicate that the supply of breast milk is often inadequate. More important is the suggestion that there may be a disparity between calorie value and calcium content of breast milk. If this is true, then growth may be occurring in the infant without the calcium needs being properly met. Taking the optimum growth curves for infants, Leitch calculates that in order to maintain the optimum 10 grammes of calcium per kilogramme of body weight which is found at birth the calcium intake must be O.2 gramme at 1 month and 0.52 gramme at 6 months. This corresponds in breast milk of average calcium content (0.32 gramme per litre) to a daily intake of 30½ fluid ounces at 1 month and 57 fluid ounces at 6 months. There are many nursing mothers who do not reach this yield, and if the calcium content is much lowered the possibility of deficiency arises. There are at least two assumptions in this reasoning that might be challenged. The first is the assumption that it is physiological for the birth ratio of calcium to body weight to be maintained: too little is known about changes in the ratio of bone weight to body weight in the first few months of life. The second assumption on which the calculations have been made is that 60 per cent. of the ingested calcium is retained by the body. We are confronted again by the paucity of knowledge of the processes of absorption from the intestine. It is obvious that the subject of the calcium intake of infants requires careful examination. The most urgent need is to know whether the calcium content of breast milk can be affected by the mother's diet. Cow's milk contains nearly four times as much calcium as breast milk, but until there is more information about the fate of the calcium in the intestine it cannot be deduced that cow's milk is a better source of calcium for the infant. The review deals with some of the points raised in this connexion. Cow's milk usually has to be diluted before being given to infants, but more important is the fact that the buffering power of cow's milk is much greater than that of breast milk. Since it is likely that the absorption of calcium depends on the *p*H of the intestine, the ability of the infant to absorb the calcium of cow's milk will depend to a certain extent on its power to secrete gastric hydrochloric acid. Existing knowledge of the secretion of hydrochloric acid in children points to marked variations. To a certain extent the high buffering power of cow's milk can be reduced by treating the milk with acid. Further, it seems more than likely that one of the functions of vitamin D is to lower the *p*H of the intestinal contents and hence increase the absorption of calcium.

Dr. Leitch's review suggests many possibilities in relation to stature and its dependence on diet. Certainly all nutrition workers in England and America are agreed about the ever-present danger of calcium deficiency in modern diets, and, as the reviewer points out, there is need for much more research work on the subject.

[1] *Nutr. Abstr. Rev.*, 1937, **6**, 553.

THE DEFENCE BUDGET

Mr. Neville Chamberlain's sixth Budget is of more than ordinary interest not only because it is apparently his last, but because it sets up a new source of revenue which it is hoped will go a long way towards solving the financial problem created by the special defence expenditure of the next few years. Not that the new levy is likely to provide more than a comparatively small part of the money necessary, the greater portion will have to be borrowed, but it will facilitate that borrowing by establishing the soundness of the nation's financial system and helping to provide for payment of interest on the money borrowed. In spite of the unexpected falling off in receipts from income tax and surtax the past year was very satisfactory and (apart from debt reduction) showed an excess of ordinary receipts over ordinary expenditure of £7,500,000. Taking the revenue for the present year on the basis of existing taxation the increase in expenditure would create a deficit of nearly £15,000,000, and the Chancellor's primary task was to fill that gap.

In accordance with general expectation the income tax is to be raised to 5s. in the £; and the increase of 3d. in the £, coupled with additional revenue to be anticipated from levying the tax on the higher profits of 1936 instead of on those of 1935 and from taking steps to reduce artificial avoidance of the tax, is expected to produce an additional £13,000,000. The balance of £2,000,000 could no doubt be raised by modification of existing taxes, such as the petrol duty or the tobacco tax, or from some of the new sources of revenue which Mr. Chamberlain had considered—such as the suggested tax on cosmetics. He has, however, taken a more far-sighted and, as many will think, a more statesmanlike view of the situation. The new defence levy, which he has explained in outline, is obviously derived from the excess profits duty which was so prominent a feature of the national finance during the great war. It must be admitted that apart from the outstanding difference that happily we are not actually at war, the circumstances are in many respects similar. Now, as then, enormous Government expenditure is tending to the enrichment of some but to the impoverishment of the community as a whole, and the reaction of any one industry on others is such as to render hopeless any attempt to disentangle from the general result such elements of increased prosperity as are due to that expenditure. The conclusion is irresistible that in such circumstances those who are fortunate enough to participate in the special prosperity should contribute specially out of their increased gains. There is not space here to discuss the form the defence levy is to take; it will suffice to say it is clear that the Chancellor's advisers have followed the main lines of the old excess profits duty, but have endeavoured to introduce such modifications as will remove some of the worst features of that much disliked but very prolific tax. We are glad to note that it is not proposed to extend it to employments or to professions. Such an extension would be unlikely to produce much revenue—for it is in the world of industry and trade that increasing demand and rising prices create extra profits—but it would undoubtedly cause inconvenience and expense in connexion with the various returns and computations that would be necessary. The Chancellor does not anticipate from this source in the current financial year more than the £2,000,000 necessary to balance his account, but for the following year it is estimated to produce over £20,000,000.

The increase in the income tax will make an appreciable addition to the already heavy burden borne by the professional man, but after the rumours that have appeared in the Press or have passed from mouth to mouth in the past few weeks he can at least feel that he has escaped other calamities. The petrol duty is not increased, the surtax limit is not lowered to £1,500, and not less but nearly £4,000,000 more is to be spent on roads. Mr. Neville Chamberlain has again brought to the management of the national finances those qualities of foresight and business acumen which the public have learned to associate with his previous Budgets. He has not only solved the immediate problem in a sound and equitable manner; he has laid the foundation for the finances of the next few years, and his successor should have good cause for gratitude.

CONTROL OF FOOD HANDLERS

Complete knowledge of the amount of illness caused by people who deal with food—"food-handlers" in the American sense—must obviously be lacking. Epidemics of scarlet fever, typhoid and paratyphoid fevers, and epidemic sore throat in recent years in England must have convinced people of the dangers of this source of infection, and a perusal of the rich store of facts compiled by J. C. G. Ledingham and J. A. Arkwright[1] vividly brings home the fact that the carrier is a danger to any food-handling trade. The Americans take these matters more seriously and logically, and the supervision of food-handlers is enforced by comprehensive regulations in the U.S.A. A recent report gives rise to the speculation that some greater measure of control in

[1] *The Carrier Problem in Infectious Diseases*, 1912, Arnold.

England might be advisable, although typhoid, for example, is not the common danger here that it is abroad—the result of the pioneer and progressive work on sewage and water supply which England gave to the world. Dr. J. R. Scott[1] of Albuquerque, New Mexico, records the results of ten years' examination of specimens—presumably faeces—from food-handlers. Among 6,600 specimens examined, twenty from twenty individual food-handlers gave cultures of typhoid bacilli, the positive carriers derived from various occupations being 3 per 1,000 among milk producers and among restaurant staffs and four among 700 bakers. It may be that our English system of general supervision and intense "detective work" by efficient bacteriologists when an outbreak occurs is in the long run more effective and less costly than the American system; but is it? Such a system might be described as "delayed preventive medicine," and delay may entail loss of life.

HISTAMINE AND ANAPHYLACTIC SHOCK

The association of histamine or histamine-like substances with various conditions of shock and anaphylaxis has for long been the object of experiment. Several investigators have observed the liberation of histamine-like substances during anaphylactic shock, using the isolated lungs of "shocked" guinea-pigs. Recently the matter has been reinvestigated by H. Schild,[2] who considers that the available evidence is strong enough at least to warrant the working hypothesis that it is indeed histamine which is liberated in the guinea-pig's lung during anaphylactic shock. Schild also used the isolated perfused lungs of guinea-pigs, previously sensitized, actively or passively, with egg albumen or with serum from rabbits previously sensitized to egg albumen. The shock condition was induced in the perfused lungs by introducing 10 mg. albumen into the perfusing fluid. The presence of histamine-like substances was tested for in the perfusate by the usual pharmacological methods, using histamine acid phosphate as comparison. By inducing shock at different intervals from the time of sensitization it is possible to obtain more or less graded responses in bronchoconstriction and vasoconstriction in the lung. Thus any correspondence between the degree of shock phenomena and the liberation of histamine could be observed: Schild discovered a close relation between the bronchial and the vascular reaction and the amount of histamine detectable in the perfusate. Histamine does not, however, seem to be the only agent concerned in the phenomena of shock, since the amount of histamine detectable is many times smaller (probably 1/100) than that necessary to reproduce the intense effects of anaphylactic shock. As it could be shown that the bronchoconstriction brought about in the lung preparation by addition of barium chloride to the perfusing fluid does not lead to a liberation of histamine, it can be concluded that "shock histamine" is not a result of the muscular contraction in the bronchi and the vessels. This is an important finding, because it was conceivable that the known changes in permeability in the muscle cells during shock might lead to a liberation of intracellular histamine. As many agents can cause shock symptoms in non-sensitized guinea-pigs (kaolin, agar, inorganic potassium and calcium salts, distilled water, etc.), it was important to demonstrate, as Schild did, that such "anaphylactoid" reactions do not release histamine from the isolated lungs. Distilled water was an exception to this, but Schild attributes this to a disintegration of the cells rather than to an active response of the tissue. It is well known that adrenaline inhibits the bronchoconstriction of anaphylactic shock, and it was found that this was so in the "shocked" isolated lung and also that adrenaline decreased the vasoconstriction. Investigation of these effects of adrenaline revealed that there was a parallel diminution in the liberation of "shock histamine" when the inhibition was marked, thus confirming the close correlation of histamine and smooth-muscle contraction. It would appear, too, that, if histamine is not the only substance associated with the smooth-muscle contractions, adrenaline also inhibits the liberation of the unknown others. It is clear that the solution of the problem of anaphylaxis is still remote, but the method of the perfused lung seems to offer a rich field.

[1] *Canadian Pub. Hlth. J.*, 1937, **28**, No. 1, 42.
[2] *Quart. J. Physiol.*, 1936, **26**, 165.

SKIN DISINFECTION

It is remarkable that there should be no general agreement on the best method of disinfecting normal skin. If the truth were known the method might be found to vary with circumstances, but some of the innumerable reagents or combinations of reagents now in use could certainly be abolished, if only for the sake of simplicity. Unfortunately there is no generally recognized method of testing a skin disinfectant, although many have been suggested and used. Dr. Jörgen Ernst in his recent monograph[1] describes an extensive series of tests of this nature, in which the method of cultivation was rubbing the skin of the hand and forearm with a gauze swab, which was then shaken in a measured volume of sterile saline, from which 1 c.cm. was then sown as a shake culture in blood glucose-agar. Such tests were carried out daily for a month on physicians and nurses in a maternity hospital, who employed a specified method of disinfection throughout this period. The object of this long-continued repetition was to discover whether repeated chemical treatment of the skin abolished its natural power of self-disinfection, and whether it led to a persistent decrease or increase in the bacterial population of the skin. The flora involved was only that of the normal skin, no extraneous bacteria being applied; this difference from Colebrook's technique perhaps accounts for the fact that the conclusions reached are diametrically opposed to his. Ernst found 0.1 per cent. mercury perchloride the most effective of his reagents and dettol cream useless. Killing extraneous and possibly dangerous bacteria on the surface of the skin is both more impor-

[1] *Hautdesinfektions Probleme.* By Jörgen Ernst. Copenhagen: Levin and Munksgaard. 1937. (10 Crs.)

tant and an easier matter than getting rid of saprophytic staphylococci which live not on but actually in its superficial layers; indeed "scrubbing-up" even increases the recoverable number of such comparatively harmless bacteria. This is a distinction which Dr. Ernst himself does not seem fully to appreciate. Nevertheless the apparent incompatibility of his results with those obtained by others indicates clearly enough that the last word has yet to be said in this difficult field of study. Other disinfectants tested were spirit and alcohol in various forms, and iodine; unfortunately there were no tests of ether, organic mercury compounds, picric acid, flavine, or other dyes; these would have afforded an interesting comparison. A factor which had to be considered was the skin's tolerance of chemical treatment. Whatever roughness was produced, either in this way or by such harmless pursuits as tennis playing, the bacterial counts rose, as of course they did when there was any sort of skin lesion. The figures in the tables of results are somewhat more erratic even than those need be which are obtained by a quantitatively imperfect method, and it is unfortunate that they are not averaged for the sake of closer comparison. Nevertheless this is a careful and interesting study.

LONDON'S MENTAL HOSPITAL SERVICE

The London County Council looks after a population of mentally afflicted persons—including only those under institutional care—equal to the total population of towns of the size of Aldershot, Macclesfield, or Gravesend—namely, about 34,000. The twenty institutions in which the mentally disordered or the mentally deficient are housed occupy more than 3,000 acres and employ a staff of nearly 9,000. The annual report of the Council on this subject[1] is almost entirely statistical, but from the figures much interesting information can be gathered and many speculations may start. For example, among the certified patients of all ages in mental hospitals the single are in excess of the married, but among the voluntary and temporary patients from middle age onwards the married are in excess of the single. Among certified single patients the males exceed the females down to and including the age period 35–44, but afterwards the females exceed the males, eventually doubling them in number, while among married patients the females are in excess at all ages. During 1935—the year with which mainly the report deals—of the 3,356 cases admitted directly to mental hospitals over 71 per cent. were "first attacks." The most frequent cause was "prolonged mental stress" and the next was acquired syphilis. The commonest form of mental disorder among the new admissions was recent (that is, under one year) melancholia, with non-systematized delusional insanity second on the list. As to the occupations of those admitted, in a list of thirty classes the one described as "housewives, retired persons, children, scholars, and students" accounted for twice as many as any other. The number discharged recovered was 1,046; the ten-year age period showing the largest number of recoveries was 35–44 for females and 45–54 for males. Of the 41,000 patients discharged "recovered" during the last forty years 13,000 were readmitted to a London mental hospital, 4,500 of them within twelve months of their discharge. Of the 1,194 patients who died in mental hospitals in 1935 the greatest number were of the age period 55–64, but this was very closely followed by the number for the period 65–74, and 163 of the total number lived to 75 or over. Tables are given relating to the special work of the Maudsley Hospital with its out-patient department and the three out-patient psychiatric clinics attached to general hospitals. The number of patients disposed of during the year in these four out-patient clinics was 2,775, while 469 were admitted from the clinics to the wards of Maudsley. The average daily number of patients on parole in mental hospital grounds was 10.66 per cent. of the total number of certified patients, while 2.28 per cent. were allowed outside the hospital grounds, and 12.05 per cent. had short periods of leave. The new cases of mental deficiency with which the Council was called upon to deal during the year numbered 774. The total number of defectives living of whom the Council has records is 16,378; 10,361 of these are under active care under the Acts, while the remainder have already been under care. This figure, which excludes the 3,752 children attending special schools for the mentally defective, gives a ratio of 3.91 of the population of the county. Finally, there is a brief appendix by Dr. F. L. Golla, pathologist to the mental hospitals, in which he touches on the routine investigations and the special researches. The latter as he mentions them one by one seem very numerous, but he adds the comment that the work (of research) continues to be patchy in its distribution, and "in certain institutions there is a spirit of inquiry among the medical staff that is lacking in others with equally good facilities for investigation."

THE SEVEN STAGES OF JOHN BLAND-SUTTON

Sir Comyns Berkeley contributes an interesting account of his friend and colleague the late Sir John Bland-Sutton to the *Journal of Obstetrics and Gynaecology of the British Empire*.[1] Entitled "The Seven Stages of John Bland-Sutton and an Epilogue," it has as a frontispiece George Belcher's portrait from *Punch*, with the old Middlesex Hospital in the background. Sir Comyns traces the history of Bland-Sutton from his schooldays, when lack of pence nearly led him to become a schoolmaster in an elementary school, through the period when he lived by coaching perverse and idle medical students at Cooke's School of Anatomy until he had saved the £100 which he paid in golden sovereigns to the dean of the Medical School at the Middlesex Hospital in exchange for a perpetual student's ticket. And, says Sir Comyns, the dean had a hole in his pocket, so that some of the hard-earned coins never reached the bank, for they literally fell out on the way. Plodding, industry

[1] *Annual Report of the London County Council, 1935.* Vol. vi. Mental Hospitals and Mental Deficiency. Westminster: P. S. King and Son Ltd. (1s.)

[1] Supplement to the *Journal of Obstetrics and Gynaecology of the British Empire*, April, 1937. Sherratt and Hughes, The Saint Anne's Press, Timperley, Cheshire.

and skill in teaching led Bland-Sutton slowly up the ladder to success until, as he used to say himself, he discovered a gold mine in the bellies of women and exploited it. He then turned his attention to public work for the profession, and did it well, as he had done everything else well, lecturing at the Royal College of Surgeons, serving on its Council, and finally attaining the acme of his ambition when he was elected President. He rose slowly but not without friction; jealousy and personal feelings often obstructed his progress, but never made him bitter, and his many hobbies enabled him to make light of them. His love for and curiosity about every kind of animal and the constant urge to travel were a godsend, and enabled him to reach a happy old age, for he was more than 81 when he died. It was right that his memorial service should be held in Westminster Abbey, for, apart from his professional eminence, he was a Londoner of Londoners and his speech ever bewrayed him.

ACTION OF ACETYLCHOLINE ON SKELETAL MUSCLE

The theory that nerve impulses are transmitted in the autonomic nervous system by chemical intermediaries is now widely known and accepted as a result of the work of Loewi, Dale, and their colleagues. Dale, Feldberg, and Vogt[1] developed this general conception further and presented evidence that acetylcholine is liberated by nervous impulses at the endings of motor nerves to skeletal muscle. They naturally suspected that the acetylcholine so liberated might act as the normal transmitter of excitation from the nerve endings to the muscle end-plate. To strengthen the evidence in support of such a view it was necessary to show that injected acetylcholine could cause a quick contraction of skeletal muscle resembling that produced by normal stimulation of a motor nerve. Dale and Gasser[2] had previously demonstrated that acetylcholine injected intra-arterially gave rise to a contraction of denervated skeletal muscle (which had been deprived of its motor nerve supply by appropriate section some weeks earlier). The Simonarts[3] were apparently the first to prove that large doses of acetylcholine could cause a contraction of normally innervated skeletal muscle, though the responses obtained were weak and irregular. Brown, Dale, and Feldberg[4] have advanced the subject further by showing that acetylcholine when injected rapidly enough into the empty arteries of normal mammalian muscle (the method of "close-range injection") in doses as small as 0.002 mg. produces with absolute regularity a contraction equal to or exceeding that resulting from a single maximal shock applied to the motor nerve. The muscle response to acetylcholine is abolished by previous treatment with curari, as is the response to stimulation of a motor nerve, but it is unaffected by atropine. After small doses of eserine a single shock applied to the motor nerve produces not a simple twitch, as is normally the case, but a repetitive response resembling an evanescent tetanus. This result is compatible with the view that eserine, by exerting its well-known action of inhibiting the esterase which normally destroys acetylcholine, permits the acetylcholine liberated at the motor nerve endings to persist longer and so gives rise to a series of responses on the part of the muscle. Bacq and Brown[5] have further demonstrated that other members of the eserine series increase (potentiate) the response to stimulation of a motor nerve to a degree which is proportional to their ability to inhibit the action of cholinesterase *in vitro*. Recent studies by Brown[6] show that acetylcholine sets up electrical changes in the muscle of a repetitive character, like those occurring during normal activity. He examined the reactions of single muscle fibres after the injection of acetylcholine and found that the action currents are first of a high frequency and then gradually tail off; this would be in agreement with the view that acetylcholine acts as a stimulus in proportion to its concentration. But as Eccles[7] has suggested in a recent review, a number of points still remain obscure and will need clearing up before the acetylcholine theory of transmission at motor nerve endings can be completely accepted. It is, for instance, known that eserine in suitable doses may cause not potentiation but a depression of the response to motor nerve stimulation, particularly if it is repetitive at frequencies over six per minute. Again, after the administration of eserine acetylcholine may *depress* the response of the muscle to subsequent stimulation of a motor nerve. Dale has suggested, in explanation of these findings, that under certain conditions the persistence of acetylcholine in the vicinity of the muscle fibres may interfere with their normal reactiveness. It must be borne in mind, however, that whatever may be the ultimate fate of the acetylcholine theory (and the evidence as a whole in its favour is very strong) it has already led to practical results of great value in clinical medicine in suggesting the prostigmine treatment of myasthenia gravis, which has proved so helpful in the management of patients suffering from this disease.

[1] *J. Physiol.*, 1936, **86**, 353.
[2] *J. Pharmacol.*, 1926, **29**, 53.
[3] *Arch. Int. Pharmacodyn.*, 1935, **49**, 302; **51**, 381.
[4] *J. Physiol.*, 1936, **87**, 394.
[5] *J. Physiol.*, 1937, **89**, 45.
[6] Ibid., 1937, **89**, 220.
[7] *Ergebn. Physiol.*, 1936, **38**, 339.

Dr. R. A. Young will deliver the annual oration before the Medical Society of London at 11, Chandos Street, Cavendish Square, on Monday, May 10, at 8.30 p.m. His subject is "Perspective and Poise in Practice."

The *Canadian Medical Association Journal* announces that the conjoint sessions of the Canadian Medical Journal and the Ontario Medical Association, to be held in Ottawa during the week beginning June 21, will be graced by the presence of their Patron-in-chief, the Governor-General. Lord Tweedsmuir will attend as guest of honour the luncheon on June 23 and participate in the ceremonial function on the evening of the same day.

ENDOCRINES IN THEORY AND PRACTICE

This article is one of a series on Endocrinology contributed by invitation

THYMUS AND PINEAL GLANDS

BY

SAMSON WRIGHT, M.D., F.R.C.P.

Structure and Development of the Thymus

The thymus is made up of lobules bound together by connective tissue. Each lobule consists of a deeply staining outer cortex of closely packed lymphocytes and a more faintly staining central medulla containing a reticulum of large branched cells in the meshes of which are comparatively few lymphocytes. The medulla also contains the concentric corpuscles of Hassall, which consist of a hyaline centre surrounded by several layers of flattened cells with poorly staining nuclei. Developmentally the thymus is an ectodermal structure which later becomes invaded by numerous lymphocytes derived from the mesoderm.

It is uncertain whether any of the original epithelial elements of the thymus persist after birth and function as secreting cells. Hammar regards the Hassall corpuscles as epithelial cells that have undergone a peculiar form of differentiation. Some histologists attempt to distinguish between lymphocytes and so-called "thymic" cells, but it is doubtful whether such a distinction is possible. According to most workers the thymus continues to enlarge in size until about the time of puberty, and usually reaches its greatest development between the ages of 14 and 16 years. It then becomes progressively smaller, and atrophies at 50 to 60 years of age. The statement commonly quoted that the thymus attains its maximum size at the age of 2 is almost certainly incorrect.

Effects of Thymectomy

The published reports of the results of extirpation of the thymus are conflicting, but on the whole the changes observed are small. In young animals nutritive changes, characterized mainly by adiposity, are said to occur; the skeleton is small and the bones are atrophic. Interesting experiments have recently been carried out to determine the effects of thymectomy in five successive generations of rats. Growth is definitely retarded in the second and later generations, especially in the first four or five weeks of life; thus a control rat at 18 days weighed 23 grammes and a thymectomized rat of the second generation at the same age weighed only 12.5 grammes.

It is important to stress that the thymus undergoes atrophy in any condition of malnutrition or prolonged illness, and more especially perhaps in deficiency of vitamin B.

Enlargement of the Thymus

After castration in young animals the thymus remains large, and does not undergo its customary involution at puberty. It has been suggested on the basis of this observation that the normal decrease in the size of the thymus is due to an internal secretion formed by the gonads. In a number of clinical conditions the thymus fails to undergo involution at the proper time, or possibly may show renewal of growth after involution has taken place. Such hyperplastic glands, usually associated with general lymphoid overgrowth, are sometimes found in infants. The abnormal thymus may weigh as much as 60 grammes at birth, and may constitute an obstruction to the respiratory passages or to the great veins.

A disorder called "thymic asthma" is described in older children; this is attributed to mechanical obstruction by an enlarged thymus, and is said to be relieved by partial removal of the gland. The thymus is enlarged in many cases of exophthalmic goitre, Addison's disease, acromegaly, eunuchoidism, and in a high proportion of cases of myasthenia gravis. Neither the mechanism of production of this enlargement nor its significance is at present understood.

The condition known as status thymo-lymphaticus merits fuller consideration. In many young persons who have died suddenly after some slight injury or infection, apparently insufficient to account adequately for the fatal result, general swelling of the lymphoid structures and enlargement of the thymus may be found at necropsy. It is commonly assumed that the hyperplasia of the thymus is related in a significant manner to the occurrence of sudden death. The whole subject needs further investigation. Recent studies suggest that general lymphoid overgrowth is not regularly associated with thymic enlargement in these cases, and that there is, therefore, no justification for the term "status thymo-lymphaticus." Others assert that the thymic overgrowth is of no importance in itself, and is only of interest as one manifestation of a general constitutional inferiority of the affected person. It is claimed that in these subjects the heart is weak and the large blood vessels relatively narrow and thin-walled. It may be that the failure of the inadequate circulatory mechanism is an important factor in causing death. The male subjects tend to show female secondary sex characters, such as scanty hair, smooth skin, and small external genitals. In women the thorax and extremities are slender, the reproductive organs are poorly developed, and menstruation is irregular or absent. The incomplete development of the gonads which characterizes these cases may perhaps be responsible for the failure of the thymus to undergo its normal involution after puberty. It must again be stressed, however, that there is as yet no evidence that the state of the thymus is in any way directly responsible for the sudden death in these cases.

Action of Thymus Extracts

Earlier workers, such as Asher, claimed that thymus extracts produce general skeletal growth and hasten the development of the gonads; the active principle was called thymocrescin. More convincing experiments have recently been carried out by Rowntree, who injected thymic extracts into successive generations of young rats. The extracts were prepared by Hanson's method, which consists of making an extract of the neck thymus gland of calves with 0.5 per cent. hydrochloric acid. The extract is a golden yellow liquid with a *p*H of about 5. It is non-toxic in relatively large doses, and non-irritating locally when injected; 100 c.cm. of the extract correspond to 60 grammes of raw calf thymus.

The result in the first generation of treated rats was that the animals became heavier than the controls, bred more frequently, and gave rise to larger litters which were above the average in weight. In the third to seventh generation there was increasingly precocious differentiation. In the data which follow, quoted from Rowntree, the normal

times of development are given in parentheses. In the treated animals the teeth erupted at birth (9 days), hair appeared at 1 to 2 days (14 days), the eyes opened at 1 to 2 days (14 days), the testes descended at 3 to 4 days (35 days), and the vagina opened at 16 days (60 days). At 60 days the average weight of the seventh generation was 180 grammes, against the control weight of 100 grammes. This excessive rate of growth is, however, not maintained, and slackens off from the end of the second month; and although the animals remain larger than the controls they do not become giant rats. The serum calcium and phosphate are raised, and there is an increase in the dimensions of the bones. Stress is particularly laid on the fact that these animals tend to have no increased susceptibility to sudden death from shock. The adrenals are found to be small, and there is lymphatic hyperplasia, especially in the intestine. Rowntree's work suggests that thymus extracts can stimulate physical, sexual, and psychical development, at any rate during the early months of life, in the rat. But it must be remembered that so far these results have not yet been confirmed.

Pineal Gland

Even less is known about the physiology of the pineal gland than about the thymus. Rolleston has admirably summarized the older views on the subject, which are distinguished by an entire lack of support of either clinical or experimental facts. The pineal is a small, red, oval body which projects from the roof of the third ventricle just above the posterior commissure and close to the Sylvian aqueduct. According to Keith the human pineal develops as an evagination of the ependymal lining of the posterior part of the forebrain. The pineal is proportionately much larger in the foetus than in the adult, and is very well supplied with blood. It contains calcareous concretions (corpora amylacea), which consist of chalky deposits on whorls of connective tissue and on the neuroglia. They appear first in childhood, and according to Harris are a prominent feature in radiographs of the skull in middle life. The histology of the gland undergoes considerable modification from the middle of foetal life to childhood, but finally it consists of blocks of large, faintly staining cells separated by a good deal of connective tissue and large sinus-like blood vessels. Calvet regards all the pineal cells as neuro-epithelial in origin, and states that all stages of transition can be traced between the pineal cells and neuroglia. Some workers claim that involution begins before puberty, and others insist that the gland is structurally identical in childhood and old age.

Excision of the pineal is difficult, and the results obtained are conflicting. Rowntree removed the pineal in a small series of rats in four successive generations, but obtained no evidence of altered development or rate of growth.

Tumours of the pineal, besides giving rise to neighbourhood symptoms, are sometimes associated with precocious puberty and precocious growth of the body. According to Marburg, pineal lesions in early life give rise to three endocrine pictures: (1) premature genital development, (2) cachexia, and (3) universal adiposity. Some of these changes may be due to involvement of the hypothalamus. In the rare so-called pineal syndrome or macrogenitosomia praecox (which usually affects boys) rapid skeletal growth takes place in the first six years, and is then followed by the early union of the epiphysis.

Pineal Extracts

The injection of pineal extracts has yielded inconclusive results. Engel claims that it inhibits the action of the growth hormone of the anterior pituitary. Hanson has prepared extracts of pineal, the most potent of which is a relatively non-toxic acid derivative which is somewhat irritating locally. The extract contains 0.6 per cent. citric acid, but control experiments show that injections of citric acid in similar amounts are without effect. The extracts have been injected into successive generations of rats, and the results obtained are roughly the opposite of those described for thymus extracts. In the first generation no effect was noted other than moderate loss of weight. In the second generation there was definite retardation of growth, with precocity in gonadal development. In subsequent generations these features were accentuated, producing a picture of precocious dwarfism with relatively large genitals. The animals are physically weak and irritable and the dwarfism is permanent, though it becomes less striking as the animals get older.

It is exceedingly doubtful whether the evidence available at the moment is sufficient to warrant the inclusion of the pineal or the thymus among the ductless glands which secrete specific hormones.

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PEOPLE'S LEAGUE OF HEALTH

GUILDHALL BANQUET IN AID OF APPEAL

A banquet was held at the London Guildhall on April 15 in support of the national appeal of the People's League of Health. The appeal is for £50,000 to place the work of the League on a secure financial basis. Hitherto it has engaged in much effective enterprise, including the carrying out of special investigations and health propaganda, on surprisingly small and uncertain resources. The League is concerned with the prevention of disease and dispersal of its causes by the education of the public and such means as offer, working through medical, veterinary, and science councils, which are very representative, and include many distinguished persons.

The LORD MAYOR (Sir George Broadbridge), who was accompanied by the Lady Mayoress and attended by the Sheriffs, presided over the banquet. He was supported by Viscount Leverhulme, the chairman of the Appeal, Sir Robert Kindersley, the treasurer, and Miss Olga Nethersole, the founder and honorary organizer of the League. The company present, which also included the Belgian ambassador, was widely representative of the Church, medicine, industry, social services, and other sides of the national life. Mr. H. S. Souttar was present for the British Medical Association. During the evening nurses from the hospitals which are co-operating with the League in an investigation into maternal nutrition took a collection at the tables, which resulted in £5,000 in cash and promises.

The health of the City hosts having been proposed by Sir ERNEST BENN, and acknowledged by the Lord Mayor, the toast of the evening, that of the League, was proposed by the BISHOP OF LONDON, who proffered himself as an example of abounding health, doing at seventy-

nine the same things as he did at twenty-nine, "and rather better." He ascribed his health to four simple rules: no alcohol, no tobacco, moderation in eating, and regular exercise. Lord HORDER, who responded, said that he must not be tempted from the toast to say much about health in general, but he did wish that people would not speak of health as if it were something artificial, something that could be put on or taken off like a garment: it was actually a state of body and mind. The Prime Minister, speaking recently on nervous strain in industry, said that "we" knew little or nothing about it. Lord Horder was uncertain as to the meaning of the pronoun. If it meant the Cabinet, although he was surprised, he accepted the modest avowal, but if Mr. Baldwin was speaking for doctors, he contended that they knew a great deal about nervous strain. People were no longer mown down in large swathes by epidemic fevers, but they were caught in the "machine" in a number of ways, and it was to help to extract them from the machine so that they might enjoy the benefits which medical science gave them in other directions that the League existed and worked. He himself was proud to be one of the League's panel of medical advisers. Experts did not run the League, but it made full use of experts. "Mr. Baldwin told us in the same speech that he dreaded the mass mind. So do I. But I am not sure that I do not dread more than the mass mind the untrained mind that is too knowledgeable and gets into the saddle, and I think we are troubled with this both in our public and private lives." Lord Horder also brought the good wishes of the Royal College of Physicians of London in the absence of its President, Lord Dawson.

Sir WALTER LANGDON-BROWN, who also replied to the toast, said that in this country it generally happened that the necessity and advantages of an enterprise had first to be established by voluntary agency, and then the State stepped in and expanded it. By the inauguration of the physical fitness campaign, and also by the establishment of the Advisory Committee on Nutrition, the Government was really in effect following out the policy which the League had been setting forward during the last eighteen years. He paid a warm tribute of gratitude and admiration to the League and to its founder. Miss Nethersole was a skilled campaigner, and had chosen the right moment to sound an advance. There was a new spirit of optimism abroad. The "winter of our discontent" seemed to be passing, in spite of blizzards on the Continent. "We have got out of the Slough of Despond, and are well set on the journey to the Delectable Mountains, but the House of the Interpreter lay between those two points on the journey, and there the League intends to reserve very roomy accommodation to interpret the lessons of medicine and science in everyday life."

The National Council for the Unmarried Mother and her Child (117, Piccadilly, W.1) has published a pamphlet, reprinted from *Mother and Child*, entitled "The Unmarried Mother: A Few Notes for Student Health Visitors." The author is Miss Susan Fass, general secretary of the Council. After explaining the legal aspect of illegitimacy, Miss Fass points out the desirability of collaboration between statutory bodies, which are in a position to provide the more material benefits of maintenance and medical care, and the social worker who "can act as guide, philosopher, and friend." The question of voluntary homes for unmarried mothers is discussed, and also the difficult problem presented by mothers who are mentally deficient. Since it is usually far from easy to secure admission for illegitimate children to children's homes, the usual arrangement is for the mother to place the child with a foster-mother. With regard to adoption, it is suggested that some infants, with this end in view, are subjected to early weaning and changes of diet, probably a contributory factor to the disproportionately high death rate of illegitimate infants.

HEALTHY HOLIDAYS FOR THE WORKER

CONFERENCE AT SKEGNESS

A conference of the British Health Resorts Association, attended by a large number of medical visitors from London and elsewhere, was held at Skegness on April 17, when the subjects discussed were "Industry and the Health Resort" and "The Health Values of Sport and Sea Bathing." This Lincolnshire resort, to the fortunes of which the Hassall "So Bracing" poster largely contributed, was hospitality itself, though some of its attractions had to be taken for granted. It was claimed by various speakers that its hours of bright sunshine number 1,570 annually, that it is the centre of the driest belt of the British Isles, that its average is only two gales a year, some ten fogs, and some twelve snowfalls, that its mean temperature the year through is only one degree lower than the average of the balmy South, and that it is one of the eighteen towns in the British Isles where there is sufficient ultra-violet radiation to cause sunburn in December. Unfortunately a period of drizzling rain and shivering cold coincided with the visit, and the "garden town" for the East Midlands was not seen at its best.

Lord MESTON, the president of the Association, in a foreword to the conference, said that since that energetic body was founded a few years ago it had shown that British spas, sea resorts, and mountain pleasances comprised everything, or nearly everything, in health resources and enjoyment that could be found on the Continent. It was now on the threshold of another task, to ensure if possible that the restorative value of our health resorts was accessible in organized fashion to the working-class as well as to those who were better off. It was a task which called for the co-operation of the local authorities in these places, the medical profession, the hotel and boarding house industry, and the organizations of employers and employed.

Industry and the Health Resort

Mr. ERNEST BEVIN, general secretary of the Transport and General Workers Union, said that this was one of the subjects which would engage the newly constituted joint committee representative of the Trades Union Council and the British Medical Association. One of the principal struggles of the trade union movement had been to establish as a part of the contract of service the right of work-people to holidays with full pay. The need for annual holidays was becoming more imperative with the intensification of industrial processes and the increasing wear and tear of modern life, and public opinion was now ripe for a reform in the direction of holidays with pay. It had been amply demonstrated that the cost of holidays to industry was offset by the decrease in sick leave and absenteeism. One result of the extension of holidays for workers would be a lengthening of the holiday season, which would be spread more or less over the year, entailing a good deal of thought if the resorts were to be made enjoyable and beneficial in changeable weather.

The subject of convalescent treatment was also touched upon by Mr. Bevin. At present, he said, convalescent treatment was provided in a very haphazard way. Trade unions and friendly societies had established convalescent homes, but the selection and treatment were limited, and the fullest possible benefit was not derived. There was a call for a co-ordinated plan, shaped by the unions and societies on the one hand and the municipalities on the other, whereby the health resort likely to be most beneficial to the person needing the convalescent treatment could be chosen and suitable arrangements made for the completion of the cure and for a pleasant and restful vacation in the best possible conditions. Another idea of Mr. Bevin's was that the Government should be urged to set up a Royal Commission to examine the whole

problem of the planning, equipment, and co-ordination of health resorts.

The need for more attention to the planning of the holiday for the industrial worker was also stressed by Mr. A. L. PETERSON of Letchworth. It was necessary to popularize the idea of holidays being taken over periods other than what were now known as the holiday months.

Prophylactic Holidays

A very original and suggestive contribution was made by Dr. LEONARD P. LOCKHART, medical officer of Boots Pure Drug Company, Ltd., of Nottingham. Dr. Lockhart considered that the distinctions between the holiday-maker and the patient were too marked. It was the holiday atmosphere that counted most in both cases, and it was a pity that people were not sent away far more often as a prophylactic, receiving sick benefit, and subject to no unreasonable restrictions. A fortnight at Skegness in selected cases would keep large numbers away from the insurance practitioner for weeks. There was still too much reluctance, he said, on the part of approved societies to send people away early rather than after long and debilitating periods of sick absence. His own firm had a home in Skegness, and he believed that money spent on the right cases at the right time had saved months of idleness and much domestic and financial loss. The doctor in industry and the insurance doctor working together were able to select cases with a high degree of accuracy. If only small firms would pool their welfare resources and employ a doctor part-time to watch over their staff this doctor, again in co-operation with the insurance doctor, could by means of prophylactic holidays effect a great deal of good. If, in addition, some skilled but simple psychotherapy could be brought into play before the holiday another large class of potential patients might be helped over some critical phase and breakdown avoided. Dr. Lockhart then went on to make a number of suggestions as to winter holidays, diet at resorts, the organization of the family side of the problem, the question of transport, and the aesthetics of holiday-making, important also from a health point of view, of which it is to be hoped holiday resorts and others concerned may take note.

In some further discussion on this subject Mr. MCADAM ECCLES said that the extension of the season during which health resorts could be used was essential: there was still a feeling that resorts were only for three months of the year. The difficulty lay in inducing the worker to believe that it was good to have a holiday at other than the orthodox time, that in fact "the year is the season."

Health Values of Sport and Games

Sir KAYE LE FLEMING, a member of the National Advisory Committee on Physical Fitness (though he was careful to point out that he spoke in an individual capacity), opened a second session of the conference on the subject of sport and games. The subject, he said, was associated with the idea of leisure, a thing not well understood, and requiring a good deal of education to make it enjoyable and profitable. It had two distinct aspects—relaxation after work, and recreation in the true sense of the word. Games not only gave pleasure because of a competitive element, but because they afforded opportunity for the development of skill, or, in other words, the bringing out of the latent possibilities of the body. He described games as often the specialized ends of physical education or training. The training of the body to perform whatever tasks it was set was different from the test to which it was put in such a game as—to take an extreme example—Rugby football. Nobody would describe Rugby football as the ideal physical training without a preliminary training of many other kinds.

Some games were particularly suitable for the general training of the body—he gave lawn tennis, swimming, and skating as examples. The disadvantage of some recreations, such as cricket and football, was the space they demanded, but there were other games which could be played with less demand in this respect, and with great benefit to the industrial populations. Badminton was of this description, of extraordinary value in physical training, and requiring very little space. Another game which might be very much more widely known and applied was deck tennis.

Sir Kaye Le Fleming said also that he looked forward to the time when, not only at seaside resorts but in all places, especially where there were bathing facilities, there would be a building which for want of a better name he would call a gymnasium, not, however, fitted with fixed apparatus for different exercises and nothing else, but a large covered building in which games could be played, physical training and exercises undertaken, and music enjoyed. He touched briefly on other topics, such as clothing in relation to exercise and work, and with regard to sea bathing suggested that the scientific effect of light and sea water combined had not received enough attention from the medical profession. He was looking forward to the work of the new Advisory Council in establishing a college of physical training for men to afford facilities whereby various research could be carried out on physical education, fatigue, exercise tolerance, and the like.

Sea Bathing

Dr. R. COVE SMITH addressed the conference on sea bathing, which, he said, had a tonic effect in promoting a healthy vascular co-ordination. The stimulus of the changing temperature, the alternation of douching and evaporation on the cutaneous nerve endings, and other physical factors had a bracing effect, provided it was not allowed to be too drastic at the beginning. The best time to bathe was between the hours of 10 and 5 in the day, preferably about two or three hours after a meal, and when the tide was high. At first the bathe should be short, measured in minutes, and with children, old people, and invalids it should always be short. Those of more robust physique might lengthen the time and increase the frequency, but this should only be done gradually. The early morning bathe on an empty stomach before the body had regained its natural warmth could only be undertaken with benefit by the strongest and by those who had become acclimatized by long practice. Bathing in the night air was also to be deprecated. The ideal was to leave the water before the stage of primary reaction had worn off. At the end of the bathe a period of rest was advisable, and perhaps a sun bathe. Dr. Cove Smith ended with the record of some observations on the effect of bathing on blood pressure in trained and untrained subjects.

Dame LOUISE MCILROY gave a brief address on the treatment of gynaecological affections at health resorts. For chronic gynaecological affections sea-water baths and warm douches were excellent. Some cases of sterility were due to endocrine dysfunction associated with obesity, and yielded to treatment by means of baths, exercises, and dieting. Intestinal stasis was responsible for many gynaecological and obstetrical complications. The loss of tone in the bowel with a sagging colon and defective support from the abdominal wall could be cured in many cases by colonic lavage, baths, and exercises. The Vichy bath was specially valuable with massage under warm water sprays. She also referred to the mental aspect of treatment at health resorts, many gynaecological and obstetrical affections being associated with neurotic states. Rest and complete relaxation, with freedom from domestic worries, did much to restore reproductive function.

The Skegness Urban District Council entertained the visitors to dinner on the evening of the conference. Replying for the British Health Resorts Association to the toast of its health, Dr. ALFRED COX said that he believed that during its short life the association had taught something of real value to the resorts. Many such

places had been content to cater for the crowds who came to them during the holiday months, but now the more enterprising were seeking to offer their advantages over a longer season and on a better organized system. Seven such conferences as the present had been held at different seaside resorts. Lord MESTON fittingly acknowledged the hospitality of Skegness, to which Mr. J. W. CRAWSHAW responded in a speech describing some of the developments on this part of the Lincolnshire coast. He claimed for Skegness that its bathing pool was among the first half-dozen in the country, its solarium was the first of its kind, and its physical culture classes were inaugurated long before the national call for such training.

Those attending the conference also visited the National Deposit Friendly Society's convalescent home, one of nine convalescent homes at Skegness—a very handsome and pleasant building, run on hotel lines, and accommodating some 120.

HOME NURSING SERVICE

PROVIDENT SCHEME FOR GREATER LONDON

A largely attended meeting to inaugurate the Greater London Provident Scheme for District Nursing was held at Grocers' Hall on April 19. The scheme will make it possible for persons working in a place where five or more are employed to obtain nursing benefits at rates far below those hitherto practicable in London. Benefits will include free nursing care of contributors and dependants, subject to medical direction, in the patient's home, also the loan of certain appliances. Midwifery and normal maternity work are excluded.

The EARL OF ATHLONE, president of the Scheme, said that he had followed with keen interest the efforts resulting in the setting up of the new organization and the growing sympathy and support it had received. London was served not by one but by scores of district nursing associations, each drawing rightly much of its vitality and inspiration from the sense of local patriotism. But the economic way of operating a provident scheme was to avoid the laborious house-to-house collection and collect at the place where the contributors worked or were congregated. Only through a central organization acting as a clearing-house for local bodies could a large-scale provident scheme be successfully run in London. The new scheme aimed at providing a supplementary service for existing district nursing organizations, to enable them to offer to the public, at the lowest possible cost, an extended and fully adequate supply of properly paid and equipped nurses. Once established, the scheme would be self-supporting, although in its initial stages it might be necessary to seek to increase the generous financial backing it had already received. The scheme was already well sponsored in that it had been initiated by the wish of a substantial body of opinion among the associations concerned, and had the active participation and support of the associations providing the great majority of the district nurses in the London area.

The Provident Principle

Lord HORDER, chairman of the council of the Scheme, said once it was accepted that the provident principle was right it might occur to others, as it had to him, that home nursing was the only health service which up to now remained uncovered by that principle applied in one form or another. Every health requirement was within reach of the ordinary wage-earner except that one service which, in many cases, made the greatest difference of all—the service of the district nurse in a patient's home. The provident idea was the same as that of insurance. A halfpenny a week—the actual basic rate proposed under the scheme—was within the means of any wage-earner. The reason why the amount was so small was largely because collection in bulk from a large number of workers at their place of employment could be done simply and at little cost. The provident or contributory method was popular from the point of view of the contributor because whereas the demand for payment at a time of illness might come at a moment when family resources were already depleted, the small regular weekly contribution was relatively little felt; also the weekly wage-earner preferred to feel that he was a supporter, according to his means in normal times, of a service the benefit of which to himself and his family he was the first to appreciate.

From the point of view of the district nursing service itself, nurses must be assured of a source of income independent of the incidence of sickness and which relieved them of the invidious task of acting as collectors. Wherever the provident method had been instituted on a large scale it had been the means of supporting an extended and better-paid service. Lord Athlone had referred to the special difficulties of setting up a comprehensive scheme in London, but, like other difficulties, they were not insuperable, and it certainly seemed that the meeting had before it the right proposals for establishing and maintaining a very necessary service. The scheme was being brought forward at an opportune moment, for the whole nation was believed to be becoming keen on physical fitness and, it was hoped, might become keen on mental fitness also.

A Great Preventive Scheme

Miss M. WILMHURST, general superintendent of the Queen's Institute of District Nursing, said that the patients who could be nursed at home were far more numerous than those requiring institutional care. Thus the trained nurse was essential in acute and chronic cases, as a link between hospital treatment and the patient at home, and also as a link between health authorities and the patient. Every district nurse in the county of London had received full hospital training and, in most areas in the outer ring, she was also fully qualified. When mention of district nursing had been made as applied to Central London it had often been asked: "But where are the patients who need nursing?" That indicated little realization of the back streets or tenement dwellings, where there were thousands of families in need of nursing. For the carrying out of the scheme there must be some centralization of the collection which would enable contributors to be nursed in any part of Greater London in which they might live. The employment group suggested by the Greater London Provident Scheme as a basis of its work was therefore the simplest and most effective solution. The scheme would prevent those subscribing from having any reluctance in calling in a nurse for fear of additional expense. Hundreds must now be "muddling through" illnesses. The scheme would undoubtedly be a great preventive agent. Moreover, because skilled care would be given to the small beginnings of illness, serious complications would in many cases be avoided. Employers would surely realize the importance of that. With increased income the district nursing associations would have the opportunity, for which they had long waited, of extending their service and improving and enlarging the accommodation for the extra nurses they so badly needed. In view of the steps being taken to ensure a fitter Britain the preventive work done by the district nursing service was becoming of increasing importance.

The February issue of the *Bulletin de l'Office International d'Hygiène Publique* contains articles by Dr. Sven Gard on *formes frustes* of poliomyelitis in Sweden; cerebro-spinal fever in the British Colonies in Africa, by Sir Thomas Stanton; cerebro-spinal fever in the French colonies in Africa, by Inspector-General Sael; human infection by *Leptospira canicula*, by Professor W. A. P. Schüffner and Mme B. Walch-Sordrager; spirochaetosis icterohaemorrhagica in Poland, by Dr. W. Chodzko; frequency and forms of tuberculosis in man caused by the bovine bacillus, by Professor L. Lange; incidence of human tuberculosis of bovine origin in Great Britain, by Sir Weldon Dalrymple-Champneys; frequency of human tuberculosis due to the bovine bacillus in Scotland, by Dr. M. T. Morgan; frequency of tuberculosis of the bovine type in Holland, by Dr. A. Charlotte Ruys; and an English memorandum by the Ministry of Health on sterilized surgical catgut.

Reports of Societies

MENTAL DISORDER FOLLOWING HEAD INJURY

At a meeting of the Section of Psychiatry of the Royal Society of Medicine on April 13, with Dr. T. A. Ross in the chair, Dr. C. P. SYMONDS introduced the subject of mental disorder following head injury, confining himself to the effects of closed injury (that is, injury without compound fracture), and excluding any reference to the effects of focal lesions or to mental disorder associated with traumatic epilepsy.

Dr. Symonds said that the outstanding symptom in the cases under consideration was loss of consciousness in some degree. The duration of the loss of consciousness was most conveniently measured by that of the traumatic amnesia. He considered first the case of minor head injuries, the so-called concussion. The recovery of consciousness might be extremely rapid, but however rapid there was a transition from deep stupor to a state of dazed bewilderment, and after this automatism before full consciousness was regained, and the amnesia would often be found to include some utterance or action which had appeared as conscious to the bystander. Occasionally the loss of consciousness after the injury might be delayed. The patient might remember the accident and the events immediately following it, and afterwards relapse into a state of automatism which might last for several hours.

After an exceptionally severe injury the progress of recovery to full consciousness might be spread over a period of days, weeks, or even months. The mental disorder after the minor injury might be dismissed as the after-effects of concussion, and that after the severe injury regarded as acute traumatic psychosis, but he believed there was no essential difference between the two, though the latter condition, with the more or less regular sequence in the symptoms from stupor to confusion, and finally to a state which resembled Korsakow's psychosis, afforded an opportunity for detailed analysis of the traumatic mental disorder. He preferred to consider traumatic psychosis as a whole, recognizing in its course the predominance of one or other symptom—in the early stages stupor, later confusion, and, after confusion had faded into the background, defective memory of recent events and a tendency to confabulation. The state of deep stupor was associated with restless bodily movements, but without speech, and without any response to internal or external stimuli above the level of the simplest alimentary, excretory, and protective functions. This might last for a few days, though he had seen one case in which stupor of that degree lasted for as long as eighty-five days, with recovery.

State of Confusion

When the patient emerged from stupor he was as a rule excited and acted in a resistive, irritable way to outside stimuli. The state of confusion, often with delirium, might last for days or weeks, with an occasional relapse into quite deep stupor. At the stage when the patient began to be accessible the salient features were profound disorientation in space and time, with a tendency to interpret the immediate surroundings in terms of long-past experience. There was defective perception, memory and judgement were grossly impaired, and there was conspicuous disturbance of the speech function. A far-reaching retrograde amnesia was noteworthy. Perseveration was one of the most striking features in this form of disorder.

The disturbance of speech function in this stage at once attracted the attention of the neurologist. After the first return of speech there was often a considerable amount of talk in which words and phrases were well formed but unrelated to one another or to the circumstances. Afterwards the spontaneous talk began to have some general relation, but was still in part meaningless. In this phase the patient's attention could generally be gained for a moment or two, but his responses were inaccurate and often so distantly related to the question or request as to seem quite at random. Comprehension of the written command generally seemed to return later than that of the spoken command, possibly due to the fact that the written sentence was less quickly appreciated.

Later Stages of Disorder

The transition from the state of confusion to the state resembling Korsakow's psychosis was a gradual one. There was a tendency for the patient always to confabulate when pressed for information, and this persisted at a time when his behaviour in relation to hospital surroundings and his speech in simple conversation no longer showed confusion, though impairment of memory and of insight and judgement remained. The confabulation might take the form of false accusations in relation to the accident.

The Korsakow state was a constant feature of the later stage of every prolonged traumatic psychosis. Gross defect of memory for recent events remained the outstanding symptom, sometimes for a long period. Occasionally there was a rather childish petulant depression, but the commonest abnormality appeared to be undue elation. The ending of the Korsakow state was not by any means clean-cut. After the tendency to confabulate had disappeared there was generally a period with defective insight and judgement and often gross defect of attention. Notable was the patient's refusal at this stage to admit anything wrong with him, and to talk in a light-hearted way about the accident, even though it had involved the death of a relative or friend.

The prognosis for the acute traumatic psychosis appeared to be invariably good, whatever its duration. The longest case of which he had a record was that of a man of 67 who still showed some confusion and grossly defective memory fourteen months after his accident, but a month later was quite clear, and although having some residual deterioration of intellect and personality was able to manage his own affairs. He had two other cases of patients over 60 who made comparable recoveries, so that it looked as if the pathological changes, whatever they might be, which were responsible for the whole sequence of mental disorder so far described were reversible, at any rate to the point of allowing restoration of function under normal conditions. These cases of severe injury provided a slow-motion picture of the mental disorder which followed minor injuries. After the minor injury the phases of stupor, confusion, and amnesic automatism followed one another with such rapidity that the whole sequence was over in a few minutes.

Residual Defects

Many patients having recovered from the acute traumatic psychosis showed residual defects in the shape of impaired memory and judgement, alterations in mood and personality, and so on, which persisted, and might be to some extent permanent. The striking feature, however, was that there seemed to be no absolute correlation between the duration or degree of the acute traumatic psychosis and the severity of the after-effects. The alterations in mood and personality found in post-traumatic dementia were often exaggerations of existing traits. The symptoms of the dementia varied with the age and constitution of the patient, and the environmental stress to which he was subjected. Age was an important factor at either extreme. Children were apt to show disorders of behaviour with defective moral sense of the same type as was associated with post-encephalitis cases. At the other extreme, impairment of the intellectual function was commoner over the age of 45. Environmental stress was also very important. Under any such stress the patients tended to become sleepless, anxious, and irritable, especially if of a sensitive disposition. The question of

compensation with its attendant worries often bulked largely in environmental stress. The tendency always was towards recovery.

All the most comprehensive studies of mental disorder following head injury had included some reference to the precipitation of a specific mental illness. In persons of a paranoid, schizoid, or manic-depressive constitution, a psychosis of the appropriate type might be precipitated by the injury. There were two ways in which the effects of an injury might contribute to such a development. In the first place, one of the symptoms in the state of post-traumatic dementia was exaggeration of pre-existing traits, and, in the second place, the injury created a situation of incapacity and invalidism to which the patient reacted in terms of his individual make-up. There appeared to be a special liability of this kind in the case of manic-depressives.

Traumatic Neurasthenia

Dr. Symonds added that he could not leave this subject without saying something about traumatic neurasthenia following head injury. Why was traumatic neurasthenia, so called, more commonly found after head injuries than after injuries to other parts of the body? He suggested that the patients liable to this condition after head injury fell into three groups: (1) those in whom the injury had released a pre-existing disposition to illness of the depressive anxiety type; (2) those who were incompletely recovered from post-traumatic dementia; (3) those who were suffering from psychogenic illness. These last might be regarded as suffering from neurasthenia which was traumatic in a physical rather than in a psychogenic sense.

Attempts had been made to explain the pathology of acute traumatic psychosis in terms either of increased intracranial pressure or subarachnoid haemorrhage. He believed that neither of these theories could be accepted, but he had no alternative pathology to offer except the old and vague conception of direct molecular damage. He had one generalization in which he desired to indulge in conclusion. The later effects of head injury could properly be understood in the light of the full psychiatric study of the individual patient and especially of his constitution—in other words, it was not only the type of injury that mattered, but the kind of head.

A Subjective Study

The PRESIDENT said that about eighteen months previously he had had the "good fortune" to be thrown from his horse and to have a slight concussion. He had a number of memories of his confusion state which he carefully set down in writing three hours afterwards. He remembered sitting on the ground in a familiar landscape, though he did not know where it was. It was very cold, the wind was blowing, and there was a babel of voices above his head. He also remembered looking at a hay stack, and had a very strong recollection that he hated the colour of it. Then he remembered walking in the road with a young man, to whom he was extraordinarily polite, whereas the testimony of a niece who was with him at the time was that immediately after the accident he was the very reverse of polite! It was evidently an instance of selective memory, similar up to a point to that which occurred in dreams, where the impressions were consecutive, but not in the least consequential.

Dr. THOMAS TENNENT gave a study based on 44 patients who had been admitted to Maudsley Hospital during the period 1923 to 1936, each of them suffering from a psychosis following a head injury, and their stay in hospital ranged from two months up to, in one case, two years. During the first eleven years of the period only twenty-six such cases were admitted, and during the last three years eighteen, suggesting that such cases were on the increase. Four of the cases proved to be general paralysis, and these would not be further considered. Of the remainder the initial symptoms were more or less the same in all—confusion, varying degrees of irritability and depression, disorientation, and gross memory disturbances. In five cases, when the degree of confusion became less marked, hallucinatory experiences and bizarre or paranoid delusional ideas became prominent. There was evidence that two of these patients had had previous hallucinatory experiences; neither of them showed any permanent improvement. In seven other cases the form of illness became depressive in nature; of these, four had now recovered from the psychosis, one was still in a mental hospital, one was dead, and one untraceable. There were three cases in children under 16. There remained twenty-five patients in whom the form of the illness was attributable solely to the accident and no other factor could be determined. All had marked impairment of memory. Two of them who had seen active service during the war showed a remarkable antedating, maintaining that the war was still on, and furnishing details of their adventures. One patient died in hospital, and of the other twenty-four, so far as it was possible to ascertain their present condition, ten had recovered, nine had improved, two were in mental hospitals, two were untraced, and one was dead. Those in the "improved" group suffered sometimes from pains in the head and lack of ability to concentrate and make a decision.

Retrograde Amnesia

Dr. EDWARD MAPOTHER said that Dr. Symonds, in this brilliant piece of clinical psychiatry, had identified the amnesia which there might be for a period following the accident with the unconsciousness which supervened immediately upon the accident. He rather doubted whether that was justifiable, and he quoted a personal experience. Everyone knew of accidents on the football field in which the player who had been kicked on the head carried on automatically until the end of the game. Once while he was a medical student he received a kick on the head while playing football, and when he came round he found to his surprise that he was playing in the opposite direction to that in which he had played before losing consciousness. He had always assumed that following the kick on the head he had played reasonable football in an automatic way, and had changed over with the others at half-time. But now he was not at all sure that he did not receive the kick considerably later, and after a very brief period of unconsciousness woke up with a retrograde amnesia extending over the previous ten or fifteen minutes. It was very important to study the gradual emergence through stupor to confusion and the automatic stage of Korsakow's psychosis.

Professor HUGH CAIRNS said that there was still a great deal to be done on the pathological side, especially in relation to acute psychosis. It was an extraordinary thing that this reversible process could exist for ten months with complete recovery. He had seen the condition come on in a man about five days after the head injury, at the time when he developed sepsis or cellulitis from other injuries, and it persisted until the sepsis disappeared. He had seen it also persist with the use of barbiturates and cease when these drugs were withdrawn. It was remarkable that a man might have a certain amount of damage to his brain and yet be able to cerebrate quite well until some toxic process began or some excess of barbiturates was taken, which caused or maintained the psychosis.

General Discussion

Dr. W. F. MENZIES mentioned several interesting cases in his experience. One was that of an old school-fellow who was hit on the head by the boom when yachting on the Clyde. After the injury, although it was eighteen years since he had left school, during which period he had never looked at Greek, he was able to repeat correctly fifty lines of the *Odyssey* and other repetition exercises which he had learned in his school days. The speaker thought that there was a molecular dissociation in these cases, followed in the chronic condition by a fibrosis.

Dr. ERIC GUTTMAN drew attention to some observations on boxers, saying that there was sufficient reason to suppose that the transient disturbance of consciousness owing to a "knock-out" was functional, and that there was no structural brain damage. Dr. A. A. W. PETRIE said that Dr. Symonds had used the term "post-traumatic dementia." Did they all mean the same thing when they used that term? He suggested that some of the cases cited by Dr. Symonds were rather of the order of post-traumatic instability of the kind which showed itself more commonly in the young. Would not that term more fittingly describe many of these cases rather than "post-traumatic dementia" such as one saw occasionally in the analogous condition of alcoholism?

Dr. PURDON MARTIN said that there were a number of people who went into dementia after having made apparently a fair recovery from the accident. He recalled the case of a railway man who had a severe injury from which in the course of a few months he recovered sufficiently to go back to work, but after a further month or two gave it up again and then deteriorated mentally fairly rapidly and became at length profoundly demented. Dr. Symonds had referred to the symptom of elation in some of these cases, with which confusion and loss of memory were associated. He was inclined to regard the elation as more or less a focal symptom, because it was a symptom often seen in frontal lobe lesions, and recently it had been seen in cases in which surgeons had carried out daring operations on the frontal lobe. It was very uncommon for such patients to pass into an anxiety-depressive state later on.

Dr. CLIFFORD ALLEN asked whether it was possible that in these cases of head injury the details of the accident were not retained in the mind, but the victim kept dreaming of them. Dr. HENRY WILSON said that what they tended to forget about head injuries was that the stage of acute confusion might last very much longer, though in a very slight degree, than was supposed. He had seen one or two cases in which apparently the patient had been held to be conscious and not confused, whereas actually he had had a very grave degree of confusion.

PSYCHOLOGY OF PUBERTY

At a meeting of the Medical Society of Individual Psychology on April 8 Dr. H. CRICHTON-MILLER discussed puberty and adolescence. This was the fourth, and last, lecture in the symposium on mental health in childhood and adolescence, the previous addresses having been delivered by Dr. Joyce Partridge, Dr. Emmanuel Miller, and Dr. Margaret Lowenfeld respectively.

Dr. Crichton-Miller began by likening adolescence to an escalator. The element of inexorable physical development was, in its way, precisely comparable to the relentless physical cadence of senescence. From the low level of childish inadequacy the individual was carried to the level of adult adequacy, only to come down again, as the generative life closed, to the inferior level of senescent inadequacy. On this moving stairway some adolescents were so eager that they walked, or even ran, so that the development of their character outstripped their physical growth. Others hung back and showed a regressive attitude, so that the growth of character was retarded when compared with their physical development. But to the child's mind the central factor was that this physiological growing-up was an inexorable process, in which were involved certain highly important principles of human life. Already familiar to the average child was the first of these principles—that of "sharing valuation." In nursery and kindergarten schools he had already been taught, or should have been taught, that he was not the only pebble on the beach; that his fellow creatures preferred a child who was not self-assertive and obtrusive; and that friends were made on a basis of mutual affection and respect. All through adolescence this broad lesson constantly confronted and challenged him, but a still more crucial and narrow application of this principle was going to present itself. It was that in adult life self-realization, both biological and spiritual, would always be a problem in reciprocation.

Puberty and Sex

At puberty the child's outlook on the sex problem was variable. The most constant thing about it was that it was rarely what the adult imagined it to be. Probably the average child's only interest was to know whether the subjective experience of early physical gratification was to be left behind with childhood, or whether it would persist through adolescence and in adult life; whether it was to be a secret or not; or whether it would cause him to suffer condemnation or reproach.

Dr. Crichton-Miller then went on to describe the different attitudes of male and female adolescents in relation to hysteria and anxiety. Cases were quoted to illustrate the repressions in adolescence of sexual problems. The adolescent was necessarily in a transitional state, and the function of this difficult period of life was to work out an adjustment between the dependence of childhood and the independence of adult life; between irresponsibility on the one hand and responsibility on the other; between the security of child life and the adventure that was the zest of adult life; between the suggestibility of youth and the responsible judgement of the grown man.

SUDDEN DEATH

At a dinner-meeting of the West London Medico-Chirurgical Society on April 9, Mr. NEIL SINCLAIR presiding, a discussion on sudden death took place.

Dr. B. T. PARSONS SMITH, in opening, confined his remarks to cases in which sudden death was due to "natural causes." As a matter of practical experience it had been found that the risk of sudden death was most common in such conditions as disease of the aortic valves, specific aortitis, angina pectoris, coronary atheroma, and in acute and chronic myocarditis. Various theories had been put forward in explanation of the occurrence of sudden asystole in these diseases. The modern trend of thought, which, incidentally, was confirmed by electrocardiographic study, associated sudden death with the development of ventricular fibrillation, which was believed to be a possible complication of all the different types of heart disease. It was further suggested that fibrillation might be the cause of sudden death in patients with cardiac disease following what might appear to be a faint. This was very probably the explanation of the unexpected fatalities which at times followed trivial accidents, sudden shocks, and painful or other stimuli. Sudden death after haemorrhage was a well-recognized possibility in the later and complicated stages of certain diseases; in some the actual loss of blood might be responsible for the sudden fatality. Dr. Parsons Smith also dealt with other vascular accidents, including arterial embolism and thrombosis. Thrombosis, he said, should always be included as a potential cause of sudden death. The condition was usually secondary to slowing of the blood stream in the diseased vessel.

Anaesthetic Deaths

Dr. EDWIN SMITH, coroner for the Western District of London, said that often, not in London but in country districts, the post-mortem examination did not disclose the cause of death, and that was very often the case when one had to take the opinion of people who had not had practical experience in pathology. Sometimes the coronary arteries were never examined, the cerebellum was missed entirely, and the stomach might not even be opened. Again, errors might occur from sheer ignorance

on the part of the person conducting the examination. In deaths occurring under an anaesthetic his own practice was not to consider that such deaths necessarily called for an inquest, but he was guided very largely by the desire of the relatives. A sharp distinction should be drawn between death due to an anaesthetic and death occurring while the patient was under the anaesthetic. With regard to the question of reporting a sudden death to the coroner, the legal position was nebulous. There was no Act of Parliament requiring a doctor to report certain deaths to the coroner, the legal compulsion being on the registrar of deaths, but it was customary for the doctor to make the notification.

Dr. T. SKENE KEITH said that in 800 recent necropsies, all performed at the request of coroners, the causes of death were found to be cardiovascular disease in 60 per cent., pulmonary disease in 8 per cent., intestinal disease in 2.5 per cent., diseases of the nervous system in 1.5 per cent., and renal disease in 0.5 per cent., while "special conditions" accounted for 6 per cent. and "external agencies" for 21 per cent. Of the external agencies, accidents and suicides represented about two-thirds, and pathologically were of little interest; surgical operations accounted for just under a quarter of these deaths. No pathologist could avoid the conviction that there was a condition in which enlarged lymphatic glands, enlarged lymphoid follicles, an enlarged thymus, a lymphoid spleen, and often an enlarged thyroid, were associated with sudden death; this was often seen in children who died under an anaesthetic.

NEOPLASM OF THE COLON

At a meeting of the Manchester Medical Society on April 7 Dr. S. W. PATTERSON (Ruthin Castle) reviewed eighty-two cases of new growths of the colon and rectum.

He said that Sir Edmund Spriggs had during the last few years analysed the admissions to Ruthin Castle of patients with diseases of the colon, and had collated and published papers on diverticulitis, ulcerative colitis, and functional disorders of the colon. Of the eighty-two cases of cancer of the colon and rectum the colon was involved in sixty-eight and the rectum in fourteen. Two-thirds of the patients had been men. Their average age was 62 years; 64 in the case of men and 57 for women. The age of most lay between 50 and 70; five patients were under 50 and eight were over 70. The sigmoid and pelvic colon were the parts of the colon most affected. The length of history ranged from a week or two to three years, but was usually a few months. The lesion was sometimes well advanced before it caused any sign or symptom. The symptoms at onset were divided into five main forms: (1) increasing constipation; (2) irregular stools or looseness of the bowels of the colonic type; (3) pain, usually above or below the navel, but occasionally in the back, thighs, or rectum; (4) upper abdominal discomfort or nausea, sometimes related to food—dyspeptic onset; and (5) the early passage of blood from the rectum. There might be an overlapping of two types of onset in the same patient. In some cases the onset was insidious. The bowel symptoms were almost negligible until some other condition led to the investigation of the digestive tract; recurring lumbago in one patient was found to be due to a secondary growth in the bodies of the eleventh and twelfth thoracic vertebrae, which had originated in a carcinoma of the descending colon. In the fourteen cases of carcinoma of the rectum the age at the onset of symptoms ranged from 37 to 75 years. The symptoms of onset were described as a frequent desire to stool or diarrhoea in eleven, constipation in two, and increased epigastric pain after meals in one. Only two patients had noticed no blood in the motion; five had suffered serious loss of weight, and in one man pain with micturition had been an early and troublesome complaint.

In the diagnosis the triad of constipation, more or less associated with diarrhoea and haemorrhage, was characteristic, but only half of the patients with cancer of the colon complained of serious constipation, and constipation might be present in ordinary intestinal stasis. Bleeding from the bowel occurred in 60 per cent. of the patients, and was not seldom ascribed to piles. Among the general symptoms loss of weight and anaemia were predominant. The anaemia might be severe in cases of carcinoma affecting the proximal colon without much obvious blood appearing in the motion; whereas when the growth involved the distal colon and blood and mucus were common, anaemia was not a prominent symptom. In all cases rectal and sigmoidoscopic examinations should be made. The patients might thus complain of dyspepsia or general malaise, usually with colonic symptoms, constipation, diarrhoea, pain, stoppage, or haemorrhage, but there was always a change in the character of the motions.

The radiological diagnosis of new growth was illustrated by a series of *x*-ray photographs and diagrams. In differential diagnosis the age factor had to be considered. Full discussions of the treatment from the surgical point of view had been published in the weekly medical journals during the last few years by Wilkie of Edinburgh, Devine of Melbourne, Rayner of Manchester, and Martin of London. In the present series excision was undertaken in thirteen of the cases of colon carcinoma and two of carcinoma of the rectum. Colostomy was performed in fifteen and ten cases respectively, while a short-circuit operation without removal had proved possible in nine of the colon cases. A consideration of the length of history with the results of surgical treatment showed that if advice had been sought earlier and a diagnosis made many more lives could have been saved.

In the subsequent discussion Dr. LUXTON, Professor MORLEY, Mr. RAYNER, and the President (Mr. GARNETT WRIGHT) again stressed the importance of early diagnosis and attention to the commencing disturbances of the bowel.

Local News

NEW ZEALAND

[FROM OUR CORRESPONDENT IN WELLINGTON]

Royal Australasian College of Surgeons

The annual scientific meeting of the College was held at Auckland from January 19 to 22. The first meeting was in the Town Hall, and was addressed by Viscount Galway. The incoming president, Sir Louis Barnett, delivered an address, and the fifth J. A. Syme Oration was given by Professor Hercus on "Prevention and Research in Relation to Surgery." The meetings may justly be called a course of intensive study during full morning, afternoon, and evening sessions. So many papers were read that there was little time for discussion. Orthopaedics was included in the general surgery section and ophthalmology constituted a separate section. Papers of more than ordinary importance were read by Sir H. Devine on "Advances in the Surgery of the Rectum"; L. A. Bennett on "Lobectomy"; and Miller and Coates on "Surgery of Head Injuries"; while Royle introduced some new operations. The epidiascope, the lantern, and the film reduced the actual reading of the papers to a minimum. On general questions, the discussion of apprenticeship in surgery took a prominent place, and it became evident that conditions of hospital appointments and organization are quite different in Australia and New Zealand, and are far from uniform in the different States

of the Commonwealth. In Victoria the hospital system is more nearly comparable to the British system, but generally the honorary appointment is rapidly losing ground. It is more applicable to the situation, at least in New Zealand, to advocate a visiting staff rather than a purely honorary staff.

British Medical Association

The biennial conference of the New Zealand Branch of the British Medical Association was held in Wellington from February 23 to 26, under the presidency of Mr. T. D. H. Stout. Sir Edmund Spriggs attended as a representative of the parent Association and also as a delegate from the Royal College of Physicians. He addressed the meeting on "Diseases of the Colon: their Diagnosis and Treatment," and his address was illustrated by very striking and instructive *x*-ray films. Sir Edmund spoke also on the subject of coronary disease. Sir Robert Muir of Glasgow delivered an address on "Paget's Disease of the Nipple," bearing on his outstanding investigations into intraduct cancer. He showed on the screen a large number of photomicrographs revealing consecutively the various stages of development of Paget's disease of the nipple. As is well known, he believes that cells can be malignant for a long time before they infiltrate, for infiltration is a secondary effect of cancer. His slides illustrated the changes not only in the epithelial cells but also in the connective tissue. His views lend support to the belief that malignant changes are the result, at least in part, of endocrine disturbances. Another visitor was Dr. F. G. Morgan of the Australian Commonwealth Laboratories, who spoke on the intravenous use of therapeutic sera, and also contributed notes on the use of serum in poliomyelitis. The Hunterian Gold Medal was presented to Dr. F. O. Bennett, this honour coming for the first time to New Zealand.

National Health Insurance

The Government has decided to introduce in the next session of Parliament a national health service, and a Parliamentary Committee is now considering the British system and also taking the evidence of witnesses. This subject came before the Conference of the New Zealand Branch of the British Medical Association, which was asked for advice by the Ministry of Health. There was little or no discussion in open meeting, but a committee of the Association has given serious consideration to the question. A political section in Parliament appears to favour nationalization of the medical profession, but the consensus of opinion in the medical profession is against nationalization and in favour of a modified scheme of national health insurance. Though they considered that adequate provision for a full health service should be made available for those not able to make financial provision for themselves, members of the National Health Insurance Committee of the New Zealand Branch of the British Medical Association favoured the view that any scheme embracing a large section of the community is neither necessary nor desirable. To quote the finding of the B.M.A. Committee:

> "By all means let the State ensure that no necessary medical service shall be unattainable by anyone from reason of lack of ability to pay for it. By all means let the heavier costs be so spread that no one will be crippled financially by major calamities of sickness; but leave to those who can meet their own costs the responsibility of meeting their needs in their own way and to their own satisfaction. Let the State concern itself more particularly with building a healthy, virile race, which cannot be done by running to the doctor and leaning on the State, but by education, disease prevention, and encouragement of self-reliance."

These sentiments are reminiscent of Macaulay and appear sound, but may not be practical in these times. In the meantime the doctors may extract whatever comfort they can from the assurance of the Government that it does not contemplate any scheme which will react detrimentally on the profession either as regards its earnings or its professional standards. But what actually does it contemplate? We must wait and see. The British system of national health insurance cannot be applied unmodified to New Zealand. In this Dominion there is no shortage of doctors and certainly no shortage of hospitals, the standard of living is very high, and the sick in all classes of the community expect, and will exact, close and skilful individual attention.

IRELAND

The Need for a National Serum Institute

At a meeting of the Section of Medicine of the Royal Academy of Medicine in Ireland on April 2 Dr. C. J. McSweeney opened a discussion on the need for a national serum institute in Ireland. He pointed out that all the different varieties of sera and other biological products used in the prevention and treatment of infectious diseases had to be imported from abroad, a most unsatisfactory arrangement in view of the fact that a national emergency elsewhere might lead to a grave shortage of supplies in the Irish Free State. Moreover, sera prepared from strains or organisms prevalent in other countries could not be expected to be as potent against the local dissimilar strains. The case mortality rates for diseases such as diphtheria and cerebro-spinal fever were consistently higher in Dublin than in cities across the water, even when similar methods of treatment and dosage were employed. Elsewhere such serum institutes had proved beneficial; they were not conducted on profit-making lines, and they served also as centres for research into problems related to serum therapy and prophylaxis. Such an institute could most usefully be organized in connexion with the new Dublin fever hospital scheme; there would be adequate land available for the grazing of the necessary animals, and a great wealth of bacteriological material would be obtained from the wards. In it there could be prepared a good supply of human sera for the prophylaxis and treatment of virus diseases such as measles and anterior poliomyelitis, and there would be enough convalescent donors to provide sera for private medical practitioners, a procedure which had hitherto been found to be impossible in most European countries. The administration of measles immune serum to the children of the poorest classes would materially lessen the mortality from this disease without requiring hospitalization of the patients. Commercial firms had not the facilities which such an institute situated in the grounds of a fever hospital would enjoy. Dr. McSweeney thought it essential that the institute should be linked closely with the newly formed Medical Research Council and the Irish medical schools. A specially qualified medical director, who was experienced in serology, should be in charge, and young graduates should be given facilities to conduct investigations of the public health problems peculiar to the Irish Free State. The institute would not undertake the routine work of bacteriological examinations; it would not be given a monopoly of the manufacture of sera for use in the Free State, nor would it attempt to compete with the many reputable commercial firms which marketed their biological products there. Its function would be to conduct research into biological problems generally, and to prepare human immune sera for use, especially by dispensary doctors, particularly in the homes of the poor and by orphanages and similar institutions which had no facilities for manufacturing their own supplies. The institute might be financed out of the hospital sweepstakes funds, which were not necessarily wholly earmarked for the building and equipping of hospitals. Professor J. W. Bigger remarked that such an institute might well become a centre of education, research, and propaganda, while it would reduce the adverse trade balance of the country, give employment, and teach medical practitioners the value

of diphtheria prophylaxis. From the financial point of view little would be gained; the institute should be free from State control, which would tend to narrowness of administration and outlook as well as to undesirable attempts at undue economies. Professor Henry Moore, who for three years had been conducting a large serum institute at the Rockefeller Institution, which supplied pneumococcal sera throughout the world, said that it was not very difficult to run such an institute if the help of sufficient technical experts could be obtained. Before deciding on its establishment in the Irish Free State there should be a careful preliminary examination of the business aspects, since it would almost certainly not prove to be commercially successful. It should not be controlled by the Medical Research Council, but should gain useful constructive advice from it. Professor Abrahamson thought that further examination of the whole question was necessary. If it could be proved that the increased mortality from diphtheria could be combated by the local preparation of serum, such an institute was then a necessity, whether self-supporting or not. Dr. V. M. Synge remarked that in Ireland the cases of meningeal infection were sporadic, and so the mortality was higher than in England, where cases were epidemic. Professor W. D. O'Kelly agreed that with a population of only three millions the establishment of such an institute could not be economical, though from the point of view of research it was most desirable. Dr. W. R. F. Collis stressed the necessity for the supply of measles serum, and thought that the institute could be best started in a small way in connexion with the new fever hospital, but not as a State venture. Dr. J. C. Flood was sure that the State would not consent to financing such an institute without some measure of control of it. He deprecated dependence on one serum production centre alone, and indicated the advantages of permitting competition. Dr. McSweeney replied that in Cork Street Hospital, with its 300 beds, between £3,000 and £4,000 was spent annually on sera, and that probably the expenditure in this connexion in the whole country amounted to at least £20,000. To run a small institute would not cost more than £10,000 a year. The diphtheria mortality in Dublin could be much reduced by using better brands of sera, and the measles mortality could be almost abolished. There must be no monopoly as regards the conduct of the institute; it should be controlled by medical practitioners and not run for profit.

ENGLAND AND WALES

A Centre of Physical Medicine in London

The Institute of Ray Therapy and Electrotherapy in Camden Road, N.W., which was established about eight years ago for the assistance of people of small means who cannot afford physical treatment in the ordinary way, is appealing for £25,000 by the end of the present year. The object of the appeal is to secure more space for its crowded work, to treble the equipment and accommodation of the electrotherapy department, and to make the Institute a centre for physical fitness, with classes for remedial and corrective exercises combined with light baths—in fact, a London spa, a home of physical medicine in the heart of the capital. To commend this plan to the sympathy of the Press a luncheon was given at the Institute on April 19, with Lord Horder, the president of the Institute, in the chair. Lord Horder said that a great work had been done in this Camden Road hospital during the last eight years, and he commended in particular the proposed enlargement on the electrotherapeutic side. Electrical methods in treatment were some two hundred years old—not nearly as old, of course, as massage or heliotherapy—but they had been obscured by a spate of new discoveries in the direction of what was generically called ray therapy. Electrotherapy had thus become the Cinderella of medicine, and he applauded the effort to be made by the Institute to restore it to a more dignified place. The Institute, with its Medical Advisory Committee under the chairmanship of Sir Robert Stanton Woods, provided up-to-date equipment and a staff expertly trained. There was much indiscriminate use by untrained people of old-fashioned machines—really a form of quackery by which the public was exploited. A type of pseudo-scientist was accustomed to go round an apparently well-equipped room and turn on one switch after another in the hope that at last the patient would say he felt better. Lord Horder also welcomed the Institute, especially with its projected extensions, as a strong ally in the campaign against that crippling and disabling group of diseases called rheumatism. Lord Semphill, chairman of the governors, described the work in more detail. The conditions treated, he said, included rheumatism and kindred diseases, the after-treatment of accidents on discharge from hospital, the prevention and cure of children's diseases such as rickets, also skin diseases, nervous disorders, and diseases of ear, nose, and throat. The Institute was giving nearly three thousand treatments a week, the number of new patients—2,344 last year—was growing rapidly, and there was evidence of the real need of this form of treatment in industrial London. Miss Violet Vanbrugh added a few sympathetic words about cases known to her which had been benefited at the Institute, and Mr. Russell Howard, a member of the Medical Advisory Committee, underlined the appeal, after which, under the guidance of Dr. William Beaumont, honorary physician and medical director, and Mrs. Beaumont, honorary secretary, the visitors made a tour of the building. The equipment includes all forms of ray therapy: infra-red rays, radiant heat, ultra-violet and *x* rays, diathermy, including the new "short wave," galvanism, faradism, sinusoidal currents, ionization, and Schnee baths. More impressive still was the sympathetic handling of the patients, especially the child patients, for whom something af a playroom atmosphere is provided. The patients all come on a certificate from their own doctors, and pay what they can afford.

Advisory Committee on Scientific and Ancillary Mental Health Services

The Board of Control, with the approval of the Minister of Health, has appointed the following to be a committee to advise upon questions arising in connexion with scientific and ancillary mental health services: The Earl of Radnor (chairman), Sir Laurence Brock, Sir Hubert Bond, M.D., Alderman J. W. Black, Alderman W. E. Lovsey, Dr. A. A. W. Petrie, Miss Adeline Roberts, M.B., Alderman J. C. Grime, Dr. C. J. Thomas, and Dr. George Somerville, with Mr. H. J. Clarke as secretary. A committee was appointed in 1931, but owing to the financial crisis which occurred in that year its work remained in abeyance. The Mental Treatment Act, 1930, empowered local authorities to provide for out-patient treatment and for the after-care of mental patients, and, subject to the approval of the Board of Control, to undertake, or contribute towards the expenses of, research in relation to mental illness. The primary function of the Advisory Committee will be to advise the Board of Control regarding organization and encouragement of research, and other ancillary services will be within its purview. On technical questions relating to research the committee will have the expert assistance of members of the Committee on Mental Disorders, of the Medical Research Council.

The Isle of Wight Mental Clinic

Some five years ago the Mental Hospitals Committee of the Isle of Wight County Council established a mental welfare clinic for out-patients under the Mental Treatment

Act, 1930. The result, as outlined in the report of the medical superintendent of the county mental hospital, Dr. C. Davies-Jones, has been very encouraging. The clinic meets at Cowes, Newport, and Ryde approximately every week, and at Whitecroft (the county mental hospital) about every fortnight. In 1936 there were in all 211 patients, including thirty-nine under 16. The medical superintendent indicates the disadvantages of trying to deal with children and adults together, and hopes for the establishment of a child guidance clinic. He regards the work with potential suicides as most important, and hints that the recent fall in the incidence of suicide on the island may be due in some measure to the help which the clinic gives to persons whose anxiety and misery are overcoming them. The Ryde sessions are held at the county hospital and the Newport sessions at premises in the town, so that the clinic is an interesting example of the three different systems which are advocated for out-patient clinics—namely, in conjunction with the general hospital, with the mental hospital, and with neither.

SCOTLAND

Lunacy in Scotland

The annual report of the General Board of Control for Scotland shows that during 1936 the total number of patients admitted to mental establishments (excluding transfers) was 2,564, 130 fewer than in the previous year and 304 fewer than the average for the quinquennium 1930–4. The number of insane persons, excluding those maintained at home by their natural guardians, was 19,631. Of these 2,719 were privately maintained, 16,821 were maintained from the rates, and ninety-one at the expense of the State. The number of voluntary patients admitted to asylums was 900, and the total number of such patients resident on January 1, 1937, was 1,327. Private patients discharged as recovered numbered 148, and pauper patients similarly discharged 842, these numbers being respectively 7 and 9 more than those for the preceding year. There were 266 deaths of private patients and 1,116 of pauper patients, the death rate for all patients having been 7.5, as compared with 7.3 per cent. in the previous year. Of the 147 patients discharged on probation sixteen were finally discharged as recovered, forty-three returned to asylums, and three died. The report refers, among other matters of general interest, to the present shortage of asylum accommodation. While extensions have recently been made, or are in process of being made, at the Aberdeen Royal Mental Hospital, the Crichton Royal Institution, and the Montrose Royal Asylum, there is considerable congestion in several other institutions. It is pointed out that admission is now taking place at an earlier stage of mental illness, for while in the period 1890–4 the average number of persons in residence in Scottish asylums on a voluntary basis was sixty-two, the average number of such persons during the years 1930–4 was 1,069. The report expresses the opinion that generally speaking the mental hospitals throughout Scotland are medically under-staffed. Wide variations were found to exist in different mental hospitals in regard to the ratio of medical officers to the number of patients—from 65 to 389 patients in residence per single medical officer. It is suggested that the medical superintendent and his assistants should be regarded as specialists, and that their time and energies should not be occupied in ancillary services—such as those of clerk of the works, stewards, farm managers, and dispensers—while their services to the public outside the institutions to which they are attached would be of great value. With regard to expenditure, the returns furnished by local authorities show that for pauper lunatics a total sum of £943,616 was spent during the year, and for aided mental defectives a further £264,106.

Association of Physicians

The annual meeting of the Association of Physicians of Great Britain and Ireland was held in Edinburgh on April 16 and 17. The sessions for hearing scientific communications were held in the Music Classroom of the University; clinical cases and demonstrations of new methods were arranged in the wards and clinical laboratory of the Royal Infirmary. On the evening of April 16 Sir Robert Philip presided at the annual dinner of the association, which was held in the hall of the Royal College of Physicians.

Falkirk Infirmary

At the annual meeting of the Falkirk and District Royal Infirmary the report submitted for 1936 mentioned that two serious problems had arisen: the provision of additional accommodation for in-patients and the obtaining of an income necessary for the ordinary maintenance of the Infirmary. The managers had therefore resolved to proceed with an appeal for £40,000, which would be used for the erection of a new nurses' home, capable of later extension, which would set free for the reception of patients a newly erected two-story ward unit which was at present occupied by part of the nursing and domestic staff. The report showed that for the first time in the history of the Infirmary there had been an adverse balance, amounting to £757. Employees' contributions represented 51.5 per cent. of the total income of the institution, and employers' contributions 5.58 per cent. The total number of in-patients during 1936 was 2,130, and of out-patients 5,836.

Correspondence

Auditory Nerve Section

SIR,—The possibility of section or partial section of the auditory nerve is a question of great interest to otologists, as by this means the most severe cases of Ménière's symptom-complex can undoubtedly be cured.

It is very much open to question whether the operating endoscope suggested by Mr. Rutherford in his article in the *Journal* of March 27 is likely either to facilitate the operation or to diminish its risks. Having spent a great many hours during the past twenty-five years in direct laryngoscopy, bronchoscopy, and oesophagoscopy, I have come to realize the limitations of tubal vision and, still more, the limitation that is imposed on an operative procedure which must be carried out at the end of a rigid tube. In the case of exposure of the auditory nerve and in the region of the internal auditory meatus the view through an endoscope might permit the identification of the facial nerve, pars intermedia, and auditory nerves, as their relationship is constant; but the nerves are accompanied by vessels whose relationship is not so constant, and it would seem that to limit one's field of vision and manipulation to an endoscopic area, without the possibility of any lateral approach, might result in the disaster that it is its intention to avoid.

The approach to the auditory nerve by open operation under local anaesthesia and after evacuating the basal and lateral cisterns is a matter of comparative simplicity, and the operation has passed long beyond the experimental stage. MM. Ombrédanne and Aubry, working in Hautant's clinic in Paris, have evolved a technique which they have employed in more than forty cases. With their method a free exposure of the region of the internal auditory meatus is obtained, the nerve required can be picked up with a crochet hook and divided or partially divided, and vessels can be avoided or bleeding dealt with by

electro-coagulation, with the assurance that any untoward happening can readily be located.

Endoscopy in tubular structures is an unfortunate necessity, but to apply it to regions which can be more adequately exposed and dealt with more accurately by a carefully planned approach does not seem to me to be an advance in surgical procedure.—I am, etc.,

London, W.1, April 19. WALTER HOWARTH.

Treatment of Leucorrhoea by Zinc Chloride

SIR,—When we first considered the treatment of leucorrhoea due to the excessive activity of the cervical glands, whether inflammatory or functional, we had foreseen the possibility of stenosis caused by scar contraction after the separation of a slough, as suggested by Dr. Worrall. For this reason we began by using the method described in the *Journal* of January 16 (p. 116) on cases which were to be operated upon, either by amputation of the cervix or by hysterectomy, during the following few months in order to study the histological changes that followed separation of the necrotic mucous membrane. We noted the rapid resolution of the inflammatory zone at the line of demarcation and complete re-epithelialization of the denuded canal within two months, and decided that the method might safely be used as a form of treatment.

In a follow-up clinic, established over two and a half years, we kept a close observation on more than 100 patients treated by this method, and examined them periodically with the possibility of cervical stenosis in view; in not one instance was there the slightest development of contracture of the lumen, and in a few cases that needed reapplication a larger pencil than the preceding could always be inserted with ease. Histological examination of over twenty cervices following an experimental application of the pencil fully supported these clinical findings. The possibility of scarring and stenosis is brought to a minimum by the presence of the slough, which very efficiently preserves the contour and size of the cervical canal until it is cast off at the end of the first week, leaving the processes of resolution well established beneath. Cervices studied microscopically some two months after the separation of the slough show no greater evidence beneath the new epithelium of the previous inflammation than small numbers of lymphocytes (see Figs. 6 and 7 of our article), and there is no sign whatever of any fibroblastic reaction such as might subsequently give rise to contracting fibrous tissue.

Repeated applications of zinc chloride, a former German treatment mentioned by Dr. Worrall in his letter, might well give rise to scarring tissue, since any attempt at epithelialization in the canal is constantly being thwarted, so that the lining is for several weeks composed of raw granulations, which are being continually inflamed and irritated by fresh applications of zinc chloride. After the single treatment with a clay pencil which we described the canal is left lined by granulations for at the most two weeks after the separation of the slough; after this time it has become epithelialized, and the inflammatory exudate in what was previously granulation tissue can be seen rapidly to resolve, leaving, finally, connective tissue which is indistinguishable from that normally found between the cervical glands. Simple painting of the cervical canal by weaker solutions of zinc chloride are quite useless as a means of destroying the vast number of deeply branching glands. This is clearly evident if a large number of sections of the cervix are carefully examined, and it was this failure to destroy the glands, and the disappointing results of all chemical treatment, which made us feel that nothing short of "chemical endocervicectomy" would be of any value. If simple repeated chemical application were successful, surgeons would not have attempted to cure the disease by diathermy, the cutting curette, and various operations.

We would like to take this opportunity of answering some of the points raised in the large number of letters we have received personally. The clay applicators may be used repeatedly. After use they should be washed and soaked in water for a few hours, dried, and then replaced in the saturated solution of zinc chloride, ready for further use. To obtain the best results it is important to use the largest applicator that can be pressed into the cervical canal, in order to ensure that the folds of mucous membrane have been flattened and are wholly in close contact with the applicator. It must be pressed well home, preferably so that its butt end is just inside the external os. If it is only partially inserted it will almost certainly be squeezed out into the vagina during the following two hours. Unless the patient is tolerant we find that brief anaethesia, such as gas or evipan, is almost essential.

Lastly, it is necessary to select the cases carefully. If the cervix is deeply torn, or the os is so patulous as not to grip the stick firmly, there will not be sufficiently close contact between it and the whole of the mucosa. But if a large-size applicator is used and inserted for its whole length and tightly gripped by the cervical canal, we can promise a satisfactory result.

—We are, etc., ALECK BOURNE.
L. T. BOND.
London, W.1, April 17. K. A. MCGARRITY.

Obstetrical Flying Squads

SIR,—With reference to the note in the *Journal* of April 3 (p. 728) regarding the attack on maternal mortality by the Birmingham Maternity Hospital, I would like to report that such a service has operated from the Lanarkshire County Council under my supervision since December, 1931. During that time approximately 300 cases have been attended by our "flying squad," with very gratifying results, which have already been communicated to another authority for publication. This report will appear at an early date.—I am, etc.,

Bellshill, April 14. H. J. THOMSON.

Medicinal Kaolin in Food Poisoning

SIR,—In the *Journal* of April 17 (p. 835) Mr. Norman Evers draws attention to the standardization and peptization of medicinal kaolin. Peptization or dispersion is affected by many ions. These are supplied not only by the electrolytes of foodstuffs, alimentary secretions, and prescription, but also by the electrolytes already present in kaolin as it leaves the mine. Such electrolytes are present in all kaolins which have been won or cleansed by water, no matter whether the purification has been by simple elutriation with moorland water or by the more elaborate catalpo or osmosis processes. They usually promote flocculation or coagulation rather than dispersion.

The biochemical problems involved when solid adsorbents are taken internally are indeed complex. They offer a wide field of interesting and important research for a team of workers with special knowledge of physical and organic chemistry as well as bacteriology, pharmacology, and clinical medicine.

In the application of adsorption therapy to the treatment of food poisoning it is rational to let the practising physician know as precisely as possible (1) the range of poisons of clinical interest for which the adsorbent has special affinities; (2) the amount of each poison which can be removed by a given weight of material. Antitoxins

are assayed in terms of toxin. On the grounds of practical utility it is desirable that antidotes such as kaolin should be assayed in a comparable manner.—I am, etc.,

London, W.1. April 17. NATHAN MUTCH, M.A., M.D., F.R.C.P.

Angina Innocens

SIR,—Dr. Trevor Davies's letter in the *Journal* of April 17 indicates the real difficulty which exists in diagnosis of some cases of cardiac pain. This is largely due to two points. First, extensive coronary disease may exist with no evidence of cardiac enlargement or disease, as shown by electrocardiograph and by *x*-ray or clinical examination. In one such case I found that both coronary vessels would scarcely admit a bristle. The second point is that in patients with cardiac pain, as in so many other diseases, there is not infrequently a mixture of both functional and organic symptoms. Hurst has discussed this fully, and Paul White, in his book on heart disease, notes it in connexion with cardiac pain. In my experience it is not uncommon to find that the clinical picture of angina innocens may be added to that of angina of effort, or spasmodic angina, in some cases. It is generally possible to define the different types, although in a few cases it is exceedingly difficult.

The best point to stress in disentangling the two appears to be to define with exactitude whether the pain comes on during exertion, and, if so, to persist in the cross-examination of the patient until it is clear whether that pain is definitely quantitative to exertion. Pain which comes on during exertion, disappears with rest, and is quantitatively related to exertion, indicates in my experience the presence of a definite, though possibly slight, coronary lesion. If such a pain is present, whatever other types of pain may also be found, angina of effort is present. It is essential for the ultimate clearing up of the difficult points in this problem that every effort be made that such cases as that described by Dr. Tudor Davies be most carefully investigated as regards their symptomatology, and that a detailed post-mortem examination be made in the event of death.—I am, etc.,

London, W.1, April 19. GEOFFREY BOURNE.

Diphtheria Immunization with A.P.T.

SIR,—I was interested in Dr. Chesney's article in the *Journal* of April 17 (p. 807) and would like to confirm the good results he has obtained with alum-precipitated toxoid by the "two-shot method." At this hospital during 1936 a total of 207 children between the ages of 1 to 5 years were given A.P.T. in doses of 0.1 c.cm. and 0.5 c.cm. with an interval of a fortnight between each injection. Schick-testing after three months yielded the following results: Schick-negative 156, Schick-positive 3, not tested 48. That is, approximately 98 per cent. of those tested became Schick-negative. Although this is not quite such a good figure as Dr. Chesney obtained, it demonstrates the high efficiency of A.P.T. given in two small doses. Economically it is one of the cheapest methods, and limitation of its use to younger children avoids all "local" and "general reactions." Apart from the usual small "nodule" after the second injection there were no "reactions" in this series of 207 cases.

While I should not quite like to dispense with the subsequent Schick test, as Dr. Chesney suggests, the high figure of conversion to the Schick-negative state relieves much of the anxiety concerning those cases which fail to return for the test.—I am, etc.,

Portsmouth, April 19. A. WILSON RUSSELL, M.D., D.P.H.

Blood Sugar Worship

SIR,—Dr. Oliver Walker's question in the *Journal* of April 17 (p. 835)—asking upon what grounds I base the statement that hyperglycaemia without ketosis or glycosuria is more likely to lead to complications than a normal concentration of sugar in the blood of a diabetic—is eminently fair, and I thank him for not demanding evidence or proof.

F. M. Allen showed before 1914 that hyperglycaemia in a dog which had had five-sixths of its pancreas removed led to degeneration of the remnant and rapid death, whereas if hyperglycaemia were avoided the dog might live indefinitely. When the treatment suggested by Allen was adopted and the diet regulated to avoid glycosuria, it was found that it was easy to render the patient sugar-free but extremely difficult to keep him so. Later, when the diet was arranged to prevent hyperglycaemia not only was the disease arrested but a few patients increased their tolerance for carbohydrate.

When insulin became available some of my patients were given only sufficient to maintain them free from glycosuria: these not only required more and more insulin as time passed but also occasionally developed neuritis, retinitis, etc. The patients who received sufficient insulin to prevent hyperglycaemia escaped neuritis and most other complications, but a very small number developed retinitis. Occasionally a patient will recover from neuritis when increased doses of insulin prevent hyperglycaemia. These observations led me to believe that complications were rarer in patients who were not allowed to be hyperglycaemic.

I admit, however, that some individuals appear to be immune to hyperglycaemia. I have seen four untreated patients with symptomless hyperglycaemia and glycosuria enjoy excellent health for close upon ten years. These I have considered to be exceptions.—I am, etc.,

London, W.1, April 17. OTTO LEYTON.

Compulsory Pasteurization of Milk

SIR,—I am grateful to Dr. G. Arbour Stephens and Mr. Paul Bernard Roth (*Journal*, April 10, p. 785) for raising two most important issues in connexion with the pasteurization of milk.

No one could disagree with Dr. Stephens that the ideal must always be to have healthy cattle, and pasteurization should be looked upon as a temporary measure. The eradication of disease among cows must necessarily be a lengthy process, and during the intervening period there is clearly need for protection. It should be noted that the medical officer of health has little jurisdiction over the cow herself.

Mr. Roth asks whether pasteurization is necessary in the preparation of cream, butter, and cheese. Cream probably contains relatively more pathogenic organisms than milk, since bacteria tend to rise to the surface: it is, in fact, evident that cream is more dangerous than milk, and that it should be marketed only after pasteurization. Efficient pasteurization by the "holder" process, together with rapid cooling, gives satisfactory results, and the cream is not materially altered by this process (Harvey, W. C., and Hill, H., 1936, *Milk—Production and Control*). Butter and cheese have been shown by a number of workers to contain tubercle bacilli and *Brucella abortus* (Pullinger, E. J., *Lancet*, 1935, **1**, 1342). Eight of a series of a hundred outbreaks of food-poisoning between 1914 and 1923 (Medical Research Council, 1925, Special Reports Series, No. 92) and a recent serious out-

break of Sonne dysentery (Leuchs, J., and Heim, E., 1930, *Z. Medizinalbeamte*, **19**, 587) were shown to be due to cheese. Pathogenic organisms tend to die out as a result of fermentation, but nevertheless it is clearly desirable that butter and cheese should be prepared from pasteurized milk. There is evidence that this is practicable, and that it is being done quite extensively. Professor Orla-Jenson in *Danish Bacteriology*, 1931, writes: "The pasteurization of cream and subsequent use of good cultures have more than anything else contributed towards making Danish butter a uniform and 'well-keeping' product."—I am, etc.,

FRASER BROCKINGTON,
Horsham, Sussex, April 13. Medical Officer of Health.

Blood Films in Lead Poisoning

SIR,—The greatly extended use of lead in the metal, rubber, electrical, and other industries suggests that lead intoxication must be commoner than ever before. This is confirmed by the final report of the Committee on 'Ethyl Petrol (H.M. Stationery Office, 1930), which proves that normal urine contains lead and that the lead hazard is omnipresent. Thus early diagnosis cannot rest on laboratory reports of a trace of lead in the urine, but must depend on symptoms even less marked than formerly, and on signs amongst which the blue line on the gums has almost vanished, and blood changes alone remain important.

Blue Line.—Since the war workers have had dental treatment and clean their teeth more regularly, so that the typical blue line is seldom seen, and must be looked for with a lens in a good light. Its presence indicates lead absorption, but if excretion is adequate the worker remains healthy. In plumbism of domestic origin the blue line is often absent, and in mild cases diagnosis used to be so uncertain that I was much interested in the earlier reports on the blood film, and by 1907 was convinced that evidence of lead absorption obtained in this way made us independent of the blue line in diagnosis.

Blood Film.—The blood film is examined for evidence of pathological regeneration. In pernicious anaemia the marrow is greatly altered, and punctate basophilia and other changes in erythrocytes are so constantly present in the blood film that they are accepted as evidence of pathological regeneration. Now in any serious anaemia with failing normal regeneration we expect the onset of the pathological process to meet the emergency; but in early plumbism there is no anaemia, yet pathological regeneration—which is not needed—precedes all other symptoms, and must be regarded as evidence of reaction of marrow inevitably excited by small doses of lead. In man the changes are both nuclear and cytoplasmic, and as long as the marrow is capable of normal regeneration there will be pathological regeneration, too, if there is lead in the blood.

In the course of normal regeneration every corpuscle enters the circulation more or less polychrome, and for the first few hours is a reticulocyte, but within twenty-four hours it becomes mature and loses its polychromasia; if the demand is urgent polychrome erythroblasts also appear, but become normoblasts in twenty-four hours.

Pathological regeneration is well seen after giving lead acetate 1 grain thrice daily for ten days. Polychromes, and therefore reticulocytes, are increased; many are larger, and some show basophil punctation, which, as I have shown, persists for twenty-four hours after polychromasia has disappeared (*Lancet*, 1920, **1**, 1110). Nuclear changes appear at the same time as these cytoplasmic changes, often in the same corpuscle. Some polychromes show azur (Cabot) rings or arcs, which also survive polychromasia, and are evidence of pathological regeneration. Commonly punctation is seen in 1 in 1,000 corpuscles, and perhaps in twice this number; rings are usually less numerous. Punctation has been adopted as an index of pathological regeneration, just as reticulation has in total regeneration, and occasionally both are seen in the same corpuscle. Routine methods stain the punctate changes poorly and the rings not at all, thus sacrificing half the available evidence. But both stain well with polychrome Manson's methylene-blue and eosin (*Journal*, 1930, **2**, 213).

I speak of the blood film with confidence because I used it to control the administration of lead in anaemia and in haemorrhage, and since 1915 in cancer. When it is given as suggested, rings and punctations appear by the fifth day, and erythroblasts, which are often punctate, before the tenth. I tested the blood films of painters and packers, and in plumbism from beer, from abortifacients, and from unknown sources. Rings and punctations should not be found in painters, and their presence indicates faulty working conditions: plumbism means culpable carelessness, often of a foreman, and the victim has blood changes up to punctated erythroblasts.

A beer had an average of one grain of lead to the gallon for fifty-five days, and a woman who drank one pint daily had colic and her blood showed rings and punctations. Her illness was mild, but several men who drank a quart or more daily had typical plumbism with punctated erythroblasts. Again, a woman was admitted to hospital as having alcoholic neuritis. Careful inquiry proved that she was really abstemious, and other possible causes of her neuritis, including lead, were considered without definite result. At this stage (July, 1908) examination with Leishman's stain showed a normal blood film except for a little punctate basophilia. Had she been seriously anaemic one might have supposed that pathological was assisting failing normal regeneration, but in approximately normal blood basophilia is an utter discord and presumptive evidence of lead absorption. The source of lead was not discovered, but subsequent progress supported this diagnosis.

Healthy workers in accumulator factories may excrete 0.35 mg. of lead per litre of urine, which we may reckon at two litres daily (Final Report on Ethyl Petrol, p. 90). Now the bowel excretes more than twice as much as the kidneys, so that a total daily excretion of 2 mg. of lead is preventing accumulation. Experimentally, by subcutaneous injection in cats, it has been found that lead taken up by the bones equals more than half the total excretion (Aub, Fairhall, Minot, and Reznikoff, 1926, *Lead Poisoning*, p. 82, and Table XVII). The worker, therefore, is storing in his skeleton at least 1 mg. of lead daily, and must be absorbing about 4 mg. (1/16 grain) daily. Now the woman taking 1/8 grain (8 mg.) of lead daily in her beer had plumbism in fifty-six days. The danger point, therefore, lies between 4 and 8 mg. of lead daily.

Many live just outside the danger zone. Though symptoms are absent no one suggests that the marrow is better for long-continued irritation, and meanwhile other important tissues may be damaged. Dr. David R. Lewis has proved the association of peptic ulcer with long exposure to lead absorption (*British Medical Journal*, 1932, **1**, 185), and since then I have found pathological regeneration still present in films from a painter on discharge from hospital after treatment of gastric ulcer. In any workman exposed to lead the presence in the film of erythroblasts, particularly if punctated, indicates that suspension from work is necessary. Punctate basophilia and Cabot rings are never present in healthy blood.—I am, etc.,

London, W.13, April 13. ROBERT CRAIK, M.D.

Dermatitis Artefacta

SIR,—The interesting paper by Dr. E. W. Prosser Thomas in the *Journal* of April 17 (p. 804) recalls to my memory a case of dermatitis artefacta which I saw more than a quarter of a century ago.

The patient, a woman of a neuropathic type in the early forties, had always "enjoyed" rather indifferent health, and had had two abdominal operations. There appeared on her

right upper arm (she was left-handed) blisters, with considerable surrounding inflammation. I suspected that these were self-inflicted, and a surgical colleague who kindly saw the case with me arrived independently at the same diagnosis. He promptly put the arm up in plaster, and the blisters cleared up in due course without any local treatment other than a single dressing; there was no recurrence. It was found that in producing the lesions she used matches.

—I am, etc.,

London, W.1, April 17. EVA MCCALL.

Intraperitoneal Haemorrhage from a Graafian Follicle

SIR,—A further case of intraperitoneal haemorrhage from a ruptured Graafian follicle may be of interest.

A girl of 20, single, was waiting for an "interval" appendicectomy, having had at least six more or less acute attacks of appendicitis of the "obstructive" type spread over some six to nine months. She was seen originally just as a typical attack was subsiding, and was due for operation in a week or two. These attacks bore no relation to the periods, and there had never been any dysmenorrhoea. She was seen at 7 p.m. on March 20 following an attack of acute pain, which she described as exactly similar to the previous "appendicular" pain. On close questioning, since she was exactly half-way between two periods and the recent correspondence was fresh in mind, she said that for the last three months she had suffered slight pain *radiating to the epigastrium*—in contradistinction to her "appendicular" attacks (see letter from J. C. Leedham-Green, *Journal*, March 6, p. 527) apparently just half-way between the periods.

Immediate operation was performed, since her temperature was 99.8° F., her pulse rate 110, and there was rigidity of the right rectus with marked tenderness over McBurney's point, hyperaesthesia, etc. A right paramedian subumbilical incision showed no free fluid, but a long retrocaecal appendix was firmly bound down by a broad adhesion half-way between caecum and tip—with a Jacksonian membrane and much congestion. The appendix was removed with some difficulty. On exploration the right ovary was found to be the size of a pigeon's egg and cystic, and a thin but steady trickle of blood was coming from a small cyst. After "trimming up" the cyst some difficulty was experienced in suturing the wound firmly enough to stop the haemorrhage, since the sutures cut out repeatedly (see the case reported by J. C. Nicholson, *Journal*, March 13, p. 585). I was unwilling to remove the ovary forthwith in a young patient, since there was quite a lot of normal ovarian tissue present. Later, however, I regretted this decision, since her pulse rate rose slowly for several days to 116 after coming down to 80, although her temperature subsided. There was, too, some pain in the iliac fossa, possibly due to sutures in the ovary, which are always said to be painful.

Injections of calcium gluconate, morphine, etc., did not help, and since the pulse volume was good and one naturally did not want to reopen the abdomen unless it was absolutely essential, further measures were tried. These consisted of an intravenous injection at a rate of not more than 2 c.cm. a minute of 10 c.cm. of sodium and magnesium citrate (Dr. Todd's, Bristol Royal Infirmary, haemostatic solution—B.D.H.). Within a few hours the pulse rate had begun to fall, reaching 80 within twenty-four hours, and further convalescence was uneventful.

I have reported this case in some detail, since the two conditions "obstructive" appendicitis and intraperitoneal haemorrhage from a ruptured Graafian follicle were present; there was no history of dysmenorrhoea; there was no question of pregnancy; sutures failed to control the haemorrhage following the post-operative rise of blood pressure; and intravenous injection of a solution of sodium and magnesium citrate apparently did control the haemorrhage. Incidentally, I have used this solution many times, as no doubt dozens of other former house-surgeons of the Bristol Royal Infirmary have done, with no alarms and almost invariable control of any reasonable haemorrhage. It seems insufficiently well known.

Most of these cases appear to be of haemorrhage from a Graafian follicle, but the second case reported by J. C. Leedham-Green seems to be one of haemorrhage from a luteal cyst, since it occurred two days before a period was expected (not mid-menstrually), and the cyst was lined with lutein cells.—I am, etc.,

CRESSWELL DAVIS, M.B., M.R.C.S.

Highbridge, Somerset, April 5.

The Birching of Children

SIR,—In the *Journal* of April 10 (p. 785), Dr. Bentlif advocates corporal punishment "carried out humanely." From what was said in your excellent leading article on judicial birching it is hard to conceive how such a procedure can be "humanely" carried out—it certainly puts a wide interpretation on the term "humane."

Dr. Bentlif draws an analogy with corporal punishment at public schools. Apart from the fact that this may be deleterious, there is an important difference. Parents who dislike the system can withdraw their children. The working-class parent, when judicial birching is ordered, has no option—except perhaps in cases such as those cited when the alternative of imprisonment is offered.

The letter concludes with the usual diatribe against psycho-analysis, and Dr. Bentlif makes the dogmatic assertion that it can do "incalculable harm, and turn healthy young people into . . . neurotics." It would be interesting to know on what grounds he makes this statement. During the last few years I have seen a considerable number of cases of neurosis and psychosis at various out-patient clinics and in wards, children both normal and "problems"—the latter at a child guidance clinic. It is rare to come across patients who have had previous psychotherapy: the patients I have seen in five years who have been psycho-analysed could be counted on one hand (and this includes private patients, who have had more facilities). Where, then, has Dr. Bentlif come across the material which allows him to make this sweeping observation? (I am no psycho-analyst, but I know from collecting results of psychotherapy how extraordinarily difficult it is to arrive at conclusions on the efficacy of treatment.) One is tempted to wonder whether it is not bias rather than scientific observation which actuates his assertion. In which case, how much importance can one attach to his observation that the victim "left the prison as if nothing had happened"? And if so, what good was the birching? But surely the fundamental psychological error lies in the idea that the boy "accepts the punishment as part of the game—that is the essence of sportsmanship." If things have come to the pitch that nothing short of imprisonment or birching is going to act as a deterrent, then it appears highly unlikely that the delinquent would adopt such a very "old school tie attitude"! (or is he a Colonel Blimp in embryo?) What Dr. Bentlif leaves out of his calculations is that a boy who is already an enemy to society is not going to react in this spirit, but, as you yourself pointed out in your leader, is frequently going to become more resentful and more anti-social than before.

In conclusion, it is worth remarking that probably the greatest of all children's magistrates, Sir William Clark Hall, discontinued ordering birching completely, on the grounds that it was no use.—I am, etc.,

W. LINDESAY NEUSTATTER, M.B., M.R.C.P.

London, W.1, April 10.

Combined Universities Election

SIR,—The implication, stated or implied, in the letters of Dr. J. S. Manson (*Journal*, April 3, p. 729) and Dr. Walter Asten (April 10, p. 786) that the result in the Combined Universities Election was a deplorable party triumph over an independent candidature does not bear examination. First, the successful candidate was supported by nearly all those members of all parties and of no party who assisted Miss Eleanor Rathbone in what was the first completely independent candidature in this constituency. Secondly, the "reasoned argument in Sir Henry's election address on complete independence," which according to Dr. Manson has carried "so little weight with that portion of the constituency which included medical graduates," may have been rejected by some because they feel that even a candidature based on a resolution of the Representative Body of the British Medical Association may not conform to their ideas of independence. It is to be noted that the general electorate were not informed of the origin of the candidature.

It is possible for many to honour and respect Sir Henry Brackenbury as they do and still to feel it right to support another candidature. It is churlish to reflect on the success of the successful independent candidate by ascribing it to a blind party loyalty, to which it obviously was not due.—I am, etc.,

School of Medicine, Leeds, April 12. FRANK C. HAPPOLD.

Radiograph or Skiagram?

SIR,—Mr. Lawson and Dr. Myles may prefer skiagram and radiograph respectively, but there is only one word which truly meets the case—namely, röntgenogram—about the meaning of which there can be no doubt. This and the other members of the same group, röntgenbild, röntgenaufnahme, etc., are almost exclusively used in the American, Scandinavian, and German medical literature. For general clinical use the shortest word will always be most popular, and "the *x*-ray," short for "the *x*-ray photograph," will be hard to supplant.—I am, etc.,

A. G. G. MELVILLE, F.R.C.S.Ed.

Victoria Infirmary, Glasgow.

Reprints of Papers

SIR,—From time to time I receive reprints of papers which have appeared in various periodicals. May I call attention to a not uncommon fault in these reprints? It is the omission of the number of the first page of the article. I have before me a reprint from a well-known scientific publication. It gives the name of the journal, the number of the volume, the number of the issue, and the date of publication, but no page number. In a country like this it is not always possible to get into touch with a library to repair the omission, and I find the impossibility of inserting a page number a difficulty in carrying out properly the Harvard system of references.—I am, etc.,

Nairobi, Kenya, March 27. JAMES H. SEQUEIRA

The Institute of Linguists (Lambert House, 10, Ludgate Hill, E.C.4), of which Sir Francis Goodenough is president, has reissued in an enlarged form its approved *List of Translators and Interpreters*. An index of trades and an index of languages are included, also the scale of minimum charges for translations confirmed at a conference of translators and interpreters held in London in 1935. This classified list is intended mainly for commercial and business houses, but a few of the translators claim acquaintance with medical terms.

Universities and Colleges

UNIVERSITY OF LONDON

The regulations for the Academic Post-Graduate Diploma in Medical Radiology were amended at a meeting of the Senate on March 17 by the deletion of the following words in the seventh paragraph on page 617 of the *Red Book*, 1936–7:

A mark of distinction will be placed against the names of those candidates who show exceptional merit in the whole examination, whether taken at the same time or in two parts.

Sir Ernest Graham-Little was appointed representative of the University at the celebrations to be held on the occasion of the four hundredth anniversary of the foundation of the University of Lausanne from June 3 to 5.

The ceremony for presentation for degrees will take place at the Royal Albert Hall on Thursday, May 20, at 2.30 p.m., and at 5.30 p.m. the same day the annual service for members of the University will be held at St. Paul's Cathedral. The preacher will be the Right Rev. Frank Partridge, D.D., Bishop of Portsmouth. Applications for tickets, accompanied by a stamped addressed envelope, should be sent to the honorary secretaries, Presentation Day Service Committee, 42, Torrington Square, W.C.1.

UNIVERSITY COLLEGE

A course of three lectures on "The Meninges and the Cerebro-spinal Fluid" will be given by Professor Lewis H. Weed, director of the School of Medicine and professor of anatomy in Johns Hopkins University, Baltimore, at University College, Gower Street, W.C., on May 24, 26, and 28, at 5.30 p.m. At the first lecture the chair will be taken by Professor H. H. Woollard.

A course of four lectures on "The History of Physiology" will be given in the Department of Physiology, Pharmacology, and Biochemistry at University College, Gower Street, W.C., as follows: May 18, Ancient Biological Conceptions, by Dr. E. S. Russell; May 20 and 21, Emergence of Modern Doctrines to the end of the Eighteenth Century, with special reference to the growth of views on the circulation of the blood, by Professor Charles Singer; May 24, Development of Theories regarding Combustion and Respiration in the Eighteenth Century, by Dr. D. McKie; and May 25, The Development of Certain Aspects of Metabolism during the Nineteenth Century, by Dr. F. G. Young. All the lectures are at 5.30 p.m., and are open without fee or ticket to students of the University and others interested in the subject.

A course of three lectures on "Some Economizing Mechanisms as a Condition of the Body's Adaptation to Increased Activity" will be given at University College, Gower Street, W.C., by Professor H. Rein, director of the Physiological Institute in the University of Göttingen, on May 3, 4, and 6, at 5 p.m. At the first lecture the chair will be taken by Professor C. A. Lovatt Evans, F.R.S. The lectures, which will be delivered in English and illustrated by films and lantern slides, are addressed to students of the University and to others interested in the subject. Admission is free, without ticket.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE

The following candidates have been approved at the examination indicated:

ACADEMIC POST-GRADUATE DIPLOMA IN PUBLIC HEALTH.—*Part I:* Beatrix H. Bakewell, J. S. B. Bray, Enid S. Davies, Sylvia C. Gavron, E. H. Harte, M. U. Hayat, S. M. H. Naqvi, A. W. Rasiah, H. C. Saksena, Margaret B. Steel, M. N. de S. Suriyawansa, V. M. Vatve.

WESTMINSTER HOSPITAL MEDICAL SCHOOL

At the recent Entrance Scholarship Examination in Anatomy and Physiology scholarships were awarded to F. C. N. Holden (King's College, London) and P. D. Trevor-Roper (Clare College, Cambridge).

COLLEGE OF PHYSICIANS AND SURGEONS OF BOMBAY

The Council of the College of Physicians and Surgeons of Bombay at its meeting in January decided to institute an examination for the Diploma in Ophthalmic Medicine and Surgery. A committee appointed to draw up regulations and a syllabus of study for the diploma reported to the Council at its meeting on March 12, when the report was adopted. The first examination for the diploma will be held in July. A copy of the regulations can be obtained from the secretary of the College.

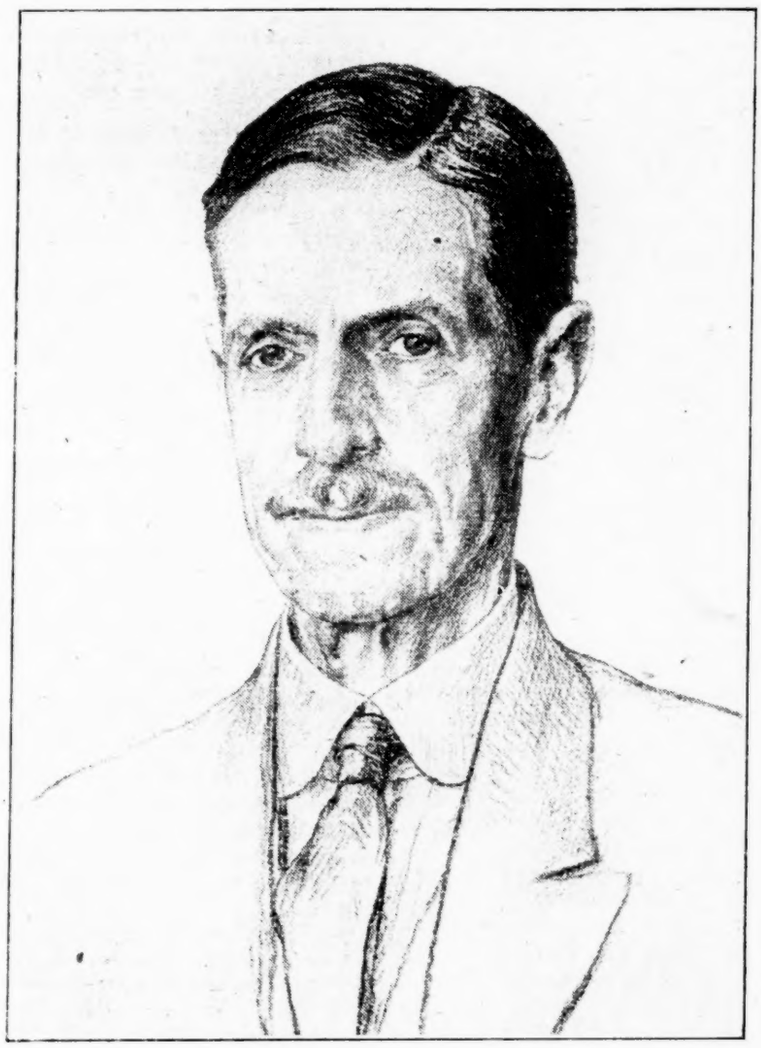
Obituary

ARCHIBALD DONALD

LL.D., M.D., F.R.C.P., F.C.O.G.

Emeritus Professor of Obstetrics and Gynaecology, Manchester University; Consulting Gynaecological Surgeon, Manchester Royal Infirmary; Consulting Surgeon, St. Mary's Hospital, Manchester

We regret to announce the death at his home in Alderley Edge of Dr. Archibald Donald on April 17. He had been in failing health for some time, and had not the strength to recover from an attack of influenza.



Archibald Donald was born in Edinburgh in May, 1860, and was educated at Craigmount House School and Edinburgh University. Before proceeding to the medical course he took his M.A. in 1880, including in this philosophy and logic, and this training stood him in good stead in later years. He graduated M.B., C.M. with honours in 1883, and proceeded to the M.D. in 1886. After having held resident posts at the Royal Maternity and Simpson Memorial Hospital in Edinburgh, he was appointed house-surgeon and resident obstetrical surgeon to St. Mary's Hospital, then in Quay Street, Manchester, in 1885, and so began his long connexion with that city and hospital which was to end only with his death. This was one of the most important resident obstetrical and gynaecological posts in the kingdom, as the hospital attended about 4,000 maternity cases annually, for all of whom the senior resident was responsible, as well as having forty gynaecological beds for which he acted as house-surgeon. He held this post for three years and then started to practise as a consultant in this branch of medicine with a clinical experience which very few men of his age had obtained. In 1888, within a few months of leaving the hospital, Dr. Cullingworth was appointed to the staff of St. Thomas's, London, and Donald was elected to the vacancy on the staff of St. Mary's Hospital.

In those days operative work was conducted in a theatre which was a bare room, with no means of artificial illumination; washing arrangements were inadequate; there were no steam sterilizers, only a large pan in which the instruments were boiled; there was no central heating, only a small open fire; no modern table which could be moved into Trendelenburg's position, only a flat-topped wooden table. In these inadequate surroundings pioneer surgery was done, but it could be carried out only by men endowed with more than average strength of character and mental equipment. At that period the scope of abdominal surgery was expanding rapidly, following the pioneer work of Clay, Spencer Wells, and Lawson Tait; and Donald, a young recruit to gynaecology, naturally wished to follow in their footsteps. Seniors, however, do not always take kindly to the experiments of a younger colleague, and in later years Donald often laughed over the methods employed by his seniors in limiting his opportunities. As an equal member of the staff he claimed an equal use of the theatre, but they insisted upon their prior claim of seniority, so whenever he had carefully prepared a patient for an abdominal section they preceded him with a filthy septic case which precluded any clean operation for the remainder of that day. It was not long before he had this rectified, but in the interval he turned his mind to the cure of prolapsus uteri. Since Manchester was a centre employing much female labour, cases of complete procidentia abounded, and up to now these were definitely incurable. The only attempt at palliation was to tighten the perineum so that the vagina would hold a pessary. Donald decided to try to cure this condition, and the more he was told how useless was the attempt the more determined did he become. In 1888 he operated upon five of these cases, combining an anterior and posterior colporrhaphy and perineorraphy with amputation of the cervix. Silver wire was the suture material in the first two cases, and both were cured, being able to follow their occupation as charwomen without any return of their trouble. In this same year he heard that some German surgeons were using catgut as suture material, so he obtained a supply and used it in his third case, which he did in two stages. So successful was this case that he never again used any other material, except

four silkworm sutures for the perineum in his colporrhaphies. This catgut was sent over in small bottles of carbolic oil, a large number of which I found in an old cupboard in the hospital twenty years later. So impressed was Donald with this material that he experimented with other methods of sterilizing catgut, which he used more and more for all types of operation, till finally he discarded all other suture materials. He must have been one of the first surgeons in this country to use it, certainly as a standard suture, and in the whole of his long career he had only one case of tetanus. Donald was a brilliant operator, and his small hand allowed him to use an incision which, in those days of small incisions, was the envy of his contemporaries, and he was able to turn to practical use many suggestions which otherwise would have been failures.

Donald was notable, too, for a clear and logical outlook which allowed him to distinguish, among the many new suggestions of those days, procedures which had a practical value, while ruthlessly rejecting those which were merely novel. His inquiring mind was never content to accept a statement merely because it had the impress of age, and one of the strong lines he took at an early age was against the then accepted idea that retroflexion was the common cause of female ills. Being an easily recognized condition, and in many cases one which was easily rectified, it became fashionable to replace these retroflexed uteri and insert a pessary, and in Donald's time some abdominal reposition operation was often employed. Nowadays it is difficult for a young gynaecologist to realize how firmly held were the views with regard to this condition and what temerity was required for a young man to assail them.

He was a strong believer in the curette, but he advocated its use in special cases and not indiscriminately, and when he used it he scraped the uterus clean. He read many papers before the London Obstetrical Society and the North of England Obstetrical and Gynaecological Society. I remember with gratitude how Donald took me to read my first paper before the London Obstetrical Society in 1906, just as Cullingworth had taken Donald himself twenty years earlier. In the flood-tide of his career Donald had little time for writing; he was much too busy attending to his innumerable patients, both in hospital and in private practice, and he trusted to direct teaching to publish his views. This is unfortunate, as much of his work is unrecorded and part is absorbed in that of others who watched and learned from him. His early days were the golden era of gynaecology, and fortunate was Manchester to have at that time a man endowed with such originality, logic, and operative ability. In 1895, on the retirement of Lloyd Roberts, he was appointed honorary gynaecological physician to the Manchester Royal Infirmary, having become a member of the Royal College of Physicians, a qualification then essential for the post, a short time earlier. Although Donald was naturally attracted to the rapidly developing field of gynaecology he was always deeply interested in obstetrics, and many of his early papers are on obstetrical subjects. He served on the Departmental Committee of the Ministry of Health which reported upon the cause and prevention of puerperal sepsis, and this was the last subject I discussed with him. He held the view that there would be little puerperal sepsis if the attendants used a plentiful supply of an efficient antiseptic for their hands.

In his early days he wrote *An Introduction to Midwifery* for students and nurses, which ran through many editions and was, for many years, a standard textbook for midwives. He was the acknowledged leader in his branch of medicine in Manchester and the thickly populated area around it, and the wonder was that he was able to get through such a vast amount of work. Slight of build and frail in looks, it often seemed impossible that he could carry on, but one of the secrets of his success was his refusal to be fussed: if he was late he serenely carried on and allowed his mind to relax when he had finished. No matter how difficult the position, Donald always had full control of himself, and in over thirty years of the most intimate co-operation I never once heard him use even the mildest of expletives. The only sign that things were critical was the use of the title "doctor" instead of the more familiar surname, and on these occasions everyone worked under tension until the corner was turned. In 1912, on the death of Sir William Sinclair, he was appointed professor of obstetrics and gynaecology of the Victoria University of Manchester, but systematic lectures on rigid lines never appealed to him, and in 1920 he persuaded the University to bring obstetrics and gynaecology into line with general medicine and surgery and create a chair of clinical obstetrics and gynaecology. This he enjoyed, as he chose his own subjects and demonstrated cases in his inimitable way, calling upon the vast storehouse of his clinical memory. This was another of Donald's outstanding features. He rarely forgot the details of a case, and when confronted by a puzzling set of symptoms he could usually recall a case with similar features and so make a correct diagnosis: this gift at times seemed almost uncanny. It was in 1925 that he resigned his chair and was elected emeritus professor.

During the war he was attached to the Second General Western Hospital as a surgeon, and threw himself heart and soul into the work, and for his services he was made a Deputy-Lieutenant of Lancashire. Donald was one of the most modest of men. He never raised a finger to obtain recognition and scorned those who did. Not infrequently he stepped aside and allowed another to occupy an office that should rightly have been his. Nevertheless, when honours came entirely unsought, especially from his professional brethren, they gave him great pleasure. He was a past-president of the Obstetrical Section of the Royal Society of Medicine; past-president of the North of England Obstetrical and Gynaecological Society, of which he was one of the founders; past-president of the Manchester Medical Society; and a past-president of the Manchester Pathological Society. His old University of Edinburgh conferred upon him an honorary LL.D. in 1927, when the British Medical Association met in Edinburgh to celebrate the centenary of Lord Lister. The University orator, in presenting him for the conferment, said: "When gynaecology was undergoing its most rapid expansion he was in the vanguard of the movement. A bold and skilful operator, original in his ideas, and quick to recognize and adopt any new and sound suggestion, he has done more than any one man to raise the Manchester school of gynaecology to its present eminence. Edinburgh is proud to recognize the sterling value of the work which this *alumnus* of hers has done." The Edinburgh Obstetrical Society made him an honorary Fellow and the Liverpool Medical Institute made him an honorary member along with Lord Dawson of Penn and Sir Robert Jones as representatives of the three branches of Medicine.

Donald had a lovable nature. A strong character with perfect control over himself, he nevertheless made allowances for others, especially younger men, not so well endowed as himself. Generous to a fault, genial, eas

in manner, and loving his fellow men, he was at his best when acting as host, especially to younger men, or away on a golfing holiday with old friends. Those who worked under him revered him as a chief and loved him as a man, and when he retired from the active staff of St. Mary's old residents attended from far and near a dinner in his honour and presented him with his portrait, of which each cherished a reproduction. Happy and successful in his work, happy in his home life, he, like all others, had his draught of bitterness. His eldest son, a youth full of promise, was an Oxford undergraduate when war broke out, and, joining up at once, laid down his life in Gallipoli. His third son, after being called to the Bar, also died after a long illness. He leaves a widow, two sons, and two daughters: one son in the Navy and the other a member of his own profession, already well established as one of the younger consulting physicians in Manchester.

W. F. S.

Professor Daniel Dougal writes:

In obstetrics and gynaecology as in politics there is a Manchester school of thought, and its founder was Archibald Donald, whose death we mourn to-day. His influence began to make itself felt soon after his arrival from Edinburgh in 1885, and continued with unabated force until his retirement from active hospital practice forty years later. Donald was a clinician first and last, and Nature endowed him with all the mental and physical qualities which make for success in that field. Not the least of these, and one which he retained to the end of his working days, was an extraordinary capacity for assimilating new ideas and applying them in the treatment of his patients. Despite the claims of an enormous hospital and private practice, Donald found time to make important contributions to the literature of obstetrics and gynaecology. His pioneer work on the treatment of genital prolapse is well known and will no doubt be referred to elsewhere, but almost as far reaching was his advocacy of a more rational treatment of uncomplicated backward displacements of the uterus. It is largely due to Donald's teaching that the indiscriminate "fixing up" of the retroflexed uterus has now been abandoned.

He retained a youthful outlook almost to the end, and was never happier than when in the company of his younger colleagues. Until a few years ago he rarely missed a meeting of the North of England Obstetrical and Gynaecological Society, and those of us who were privileged to be his companions on the train journeys between the different meeting places in Lancashire and Yorkshire will always be grateful for his cheery companionship and inexhaustible fund of anecdote. At the meetings of our Charles White Club he was also in his element, and his colleagues are not likely to forget the summer meetings at Alderley when Donald, always the perfect host, entertained us to a dinner of such excellence that the indifferent golf which preceded it was mercifully forgotten. Now he has died, full of years, and secure in the memory and affection of his friends, who can say with truth as he passes on—there goes a man!

A Surgical Colleague writes:

To those who recall the extraordinary activities, physical and mental alike, of Archie Donald throughout a long and extremely distinguished professional career it must have caused distress to witness the rapid decline of the last few months, during which he was confined indoors, quite unable to enjoy the beautiful garden which he loved so well and on which he had expended so much thought, interest, and energy. Of the details of Donald's career other colleagues in his special sphere of work are in a much better position to testify than I, but it is of Donald the man himself that I would pen a few words in most affectionate memory. Widely recognized from his early days as the outstanding exponent of his chosen speciality, Donald was throughout completely free from any taint of professional jealousy, and his help was always most willingly and cheerfully given to his younger colleagues; indeed most members of the honorary staffs of the Manchester Royal Infirmary and the St. Mary's Hospitals owe their position largely to his support, since his influence with the governing bodies was greater than that of any other individual medical man, and to have Donald on one's side practically connoted success in such elections. His modesty so far as it concerned his own most valuable and original work was carried almost to the point of absurdity, for although he was undoubtedly the originator of the "Manchester" operation for uterine prolapse, this procedure has elsewhere come to be associated with the name of one of his younger colleagues who first learned it from his senior, and whose only contribution thereto was a trifling and comparatively unimportant modification. Endowed with an almost uncanny power of sifting the wheat from the chaff among the many suggestions in the medical journals of his day, he was ever quick to seize upon and to put into practice those he considered to make for real progress. A powerful and fearless advocate of what he believed to be right, he was absolutely intolerant of shams and frills of every description, and although his advice when sought did not always coincide with the seeker's own inclinations, yet in the long run it invariably proved correct. No one could be more loyal or generous as a friend, and the many happy hours spent with him on the golf links and at the billiard table, though almost without exception to my own gross undoing, remain as priceless recollections.

The loss of his eldest son, killed on the Gallipoli Peninsula, was a cruel stroke of fate from which he never really recovered. At the outbreak of the great war Donald, then aged 54, joined the *à la suite* staff of the Second General Western Hospital with the rank of captain, becoming thereby junior to most of those considerably junior to himself in civil practice; for some months, in addition to his other military duties, he took his turn to "live in" and do what was, in reality, merely the work of a house-surgeon—an admirable instance of his loyalty and devotion to what he thought to be his duty. So passes into the realm of our most treasured memories one whom all who had the honour of his close acquaintance proudly regard as a conspicuously brilliant example, indeed the very embodiment of what is, after all, the very finest of all the many fine species that go to constitute the genus *homo*, in every sense of the word and in every aspect and action of daily life, the truly British gentleman.

JOHN TAYLOR, M.D., Ch.M.

Surgeon in Charge of Orthopaedic Department, Dundee Royal Infirmary

The death took place at his residence in Windsor Street, Dundee, on April 14 of Mr. John Taylor, who was honorary surgeon to Dundee Royal Infirmary with charge of the orthopaedic department.

John Taylor was born at Broughty Ferry in 1893, and after taking a medical course at St. Andrews and Edinburgh he graduated M.B., Ch.B. at St. Andrews in 1914, proceeding to the M.D. degree in 1916 and the Ch.M. at the same university in 1919. During the war he was resident surgical officer of the War Hospital at Dundee, and

later became surgical specialist to a base hospital in Mesopotamia and to the 1st Scottish Casualty Clearing Station. He was also medical officer to the Scottish Horse and reached the rank of lieut.-colonel R.A.M.C.(T.A.). After the war he decided to devote himself to orthopaedics. He was appointed lecturer in regional anatomy at University College, Dundee, and clinical surgical tutor and assistant to the professor of pathology at St. Andrews University, becoming later honorary assistant surgeon and anaesthetist to the Royal Infirmary of Dundee. He joined the British Medical Association in 1917, and was a Fellow of the Association of Surgeons and an associate member of the Orthopaedic Society of Great Britain.

Mr. Taylor made various communications to current medical literature, including "Three Cases of Acute Perforating Ulcer of the Small Intestine" (*Edinburgh Medical Journal*, 1925), "Value of Ileo-colostomy in Acute Intestinal Obstruction" (ibid., 1924), and "Note on Operative Treatment of Perforated Gastric Ulcer" (*British Medical Journal*, 1926). He was a popular member of the medical profession in Dundee and its neighbourhood, and was unmarried.

SIR JOSEPH FAYRER, BT., C.B.E.,

M.D.St. And., F.R.C.S.Ed., Lieut.-Colonel R.A.M.C. (ret.)

The death took place at his residence in Gullane, East Lothian, on April 13, of Lieut.-Colonel Sir Joseph Fayrer, Bt., who for a number of years occupied the position of superintendent of Edinburgh Royal Infirmary.

He was born on March 8, 1859. His father was the celebrated Sir Joseph Fayrer, the first baronet, who at one time was surgeon-general I.M.S., and president of the Medical Board of the India Office, and who was well known for various medical works dealing with diseases and snakes of India. The son was born in Edinburgh when his parents had returned from India after the siege of Lucknow. He was educated at Rugby, and afterwards at Trinity College, Cambridge, where he graduated B.A. in 1882, taking his M.A. in 1885. Later he studied medicine at St. George's Hospital and the Extramural School at Edinburgh, and qualified L.R.C.P. and S.Ed. in 1886, taking the M.B. of the University of St. Andrews in 1887 and the M.D. in 1889, in the same year becoming also a Fellow of the Royal College of Surgeons of Edinburgh.

He entered the R.A.M.C. as surgeon in July, 1886, and was at first medical officer to the Royal Horse Guards, and afterwards spent many years on service in India and Hong Kong. He became lieutenant-colonel in 1906 and retired from the Corps in July, 1911. He first joined the British Medical Association in 1906, and in the following year succeeded to the baronetcy on his father's death. In the latter part of 1911 he returned to Britain and was elected superintendent of the Royal Infirmary of Edinburgh, a post which he held until 1923, when he retired. During his military service he had held the posts of secretary to the P.M.O. London District and medical officer to the Duke of York's Royal Military School at Chelsea; and before his appointment to Edinburgh had been for two years in command of the military hospitals at Hong Kong. During the war he became commanding officer of the 2nd Scottish General Hospital situated at Craigleith, Edinburgh, and at the close of the war he again took up his duties as superintendent of the Royal Infirmary. In 1919 he received the C.B.E. for war services.

The late Sir Joseph Fayrer was celebrated for his charm of manner, which endeared him greatly to all those who served under him. The great success attained by the 2nd Scottish General Hospital was largely due to his unwearied exertions in constantly organizing various forms of service for the soldier patients for whose care he was responsible. In all his dealings he showed a sense of fairness, kindness, and an understanding of the point of view of other people. He is survived by his widow, the son who succeeds him in the baronetcy, and two daughters. The interment took place at Dirleton Cemetery, East Lothian, on April 16.

N. C. PATRICK, M.R.C.S., D.P.H.

The death occurred in a Belfast nursing home on March 24 of Dr. N. C. Patrick, Chief Medical Officer to the Ministry of Home Affairs, Northern Ireland, after a brief illness. He was a member of a distinguished County Antrim family and was well known to most members of the profession of Ulster for his administrative ability, his gracious personality, and his interest in the profession to which he belonged. He was chosen to act as one of the vice-presidents in the Section of Medical Sociology at the forthcoming Annual Meeting in Belfast, and it is a matter of regret that his unexpected death deprives the Section of a wise officer and useful member.

An intimate friend writes: "An outstanding member of the medical profession in Ulster has been removed by the death of Captain Norman Colum Patrick. He was educated at Rossall, and was a graduate of Cambridge University, receiving his medical training at St. Bartholomew's Hospital. He was appointed medical officer of Glenavy Dispensary District in Co. Antrim, and subsequently became tuberculosis officer for the county. At the outbreak of the great war he volunteered for active service, and as captain in the Royal Army Medical Corps served in France with the 110th Field Ambulance, 36th Ulster Division, throughout the greater part of the war. After the war he was appointed medical inspector of the Local Government Board of Ireland, and subsequently of the Ministry of Home Affairs in Northern Ireland, as Chief Medical Officer. In this capacity he enjoyed the confidence not only of the Department but also of the local authorities with whom he came into close contact. His ability, coupled with a quiet manner and an unassuming disposition, gained for him the respect and esteem of all, and endeared him to his colleagues and associates in the Ministry, who have suffered the loss not only of a wise counsellor but of a loyal friend."

Dr. Patrick is survived by his wife (the only daughter of the Lord Chief Justice of Northern Ireland and Lady Moore) and one daughter, with whom there is widespread sympathy in their bereavement.

Dr. HECTOR LEAK, who had practised for many years at Winsford, Cheshire, died on April 10 after a short illness. He was born at Winsford on October 5, 1856, the son of A. P. Leak, M.D., and received his education at King William College, Isle of Man, and Owens College, Manchester, qualifying as M.R.C.S. and L.R.C.P. in 1878. Dr. Leak during his long life took a prominent part in local public affairs. A justice of the peace for the county of Chester he acted for many years as chairman of the local bench of magistrates. In politics he was a keen Liberal and a supporter of the League of Nations. Before retiring from practice he was senior surgeon to the Albert Infirmary, medical officer to the Post Office and to the Northwich Union. During most of his active years he was a member of the British Medical Association. His son, Dr. W. M. Leak, practises at Winsford, thus continuing the long family tradition.

Medical Notes in Parliament

The Army and Air Force (Annual) Bill and the Coal Mines (Employment of Boys) Bill, which had passed the House of Commons, were read a first time in the House of Lords on April 14.

On the same day, the House having received a report from the Attorney-General on the Liverpool United Hospital Bill, read the measure a second time. The Bill was sent to the Committee on Unopposed Bills, the promoters having arranged to make amendments which meet observations made by the Attorney-General.

The Education (Deaf Children) Bill, the title of which had been amended from "Deaf Children (School Attendance) Bill, was read a third time by the House of Lords on April 15 and returned to the House of Commons. The Edinburgh Royal Maternity and Simpson Memorial Hospital Order Confirmation Bill was read a first time by the House of Lords on April 15, and, in conformity with the new procedure on Scottish private legislation, was deemed to have been read a second time and reported from Committee.

On April 20, the Maternity Services (Scotland) Bill and the Methylated Spirits (Scotland) Bill were introduced in the House of Lords and read a first time.

The Divorce (Scotland) Bill, which has passed the House of Lords, was read a first time in the House of Commons on April 19. The Diseases of Fish Bill was reported from a Standing Committee of the House of Commons on April 20.

The Budget

Mr. CHAMBERLAIN opened the Budget in the House of Commons on April 20. He announced that the income tax would be increased by 3d. in the £ to 5s., with additional provision against tax evasion. A National Defence Contribution was proposed on the growth and profits of trades and businesses, but not of professions. No increases were proposed in indirect taxation. Mr. Chamberlain referred to the report of the Select Committee on the medicine stamp duties. He said he had had many representations from various quarters since its publication, and he was having the recommendations of the committee examined in the light of those representations. In view, however, of the very complex issues involved and the strain on the time of Parliament, he did not propose to introduce legislation on the subject in the Finance Bill this year. He proposed to increase the income tax by 3d. in the £, and to impose a tax on the growth of profits of all persons engaged in industries, trade, or business of any kind whose profits in any accounting year ended after April 5, 1937, exceeded £2,000. That, of course, let out small concerns whose profits were at a low level. The tax would not be applicable to professions or employments, for although those engaged in employment or in a profession would no doubt benefit by the general improvement, he did not consider that circumstances would warrant their inclusion in this charge, and indeed the proposal could not be appropriately applied to them. This charge would be called a "National Defence Contribution."

The Budget resolutions were agreed to.

Marriage Bill

The Marriage Bill, as amended by a Standing Committee, was discussed in the House of Commons on report on April 16. On Clause 2 (Grounds of Petition for Divorce) Mr. OSWALD LEWIS moved to insert "persistent" before "cruelty" in the ground "has since the celebration of the marriage treated the petitioner with cruelty."

Sir DONALD SOMERVELL said the Bill would not interfere with the authoritative definition of cruelty as: "conduct of such a character as to cause danger to life and limb, or health, bodily or mental, or such as to give rise to a reasonable apprehension of such danger." If it resulted from one act the House might desire that the act should be a ground for divorce. He recommended the House not to limit the clause as Mr. Lewis proposed.

Lord WOLMER said the Attorney-General could not intend one single act, however grave, should be a ground. Sir DONALD SOMERVELL said the communication of venereal disease would be a sufficient single act. Lord WOLMER said the subject ought to be treated separately in the Bill. In most cases it involved an act of adultery and so would come under the present law.

Commander AGNEW said that the subsection in dealing with cases of cruelty where venereal disease was involved would seek to cover cases where a disease of this kind was inherited or acquired accidentally. He would support the later clause which dealt with, as a ground of nullity, the question of a respondent who was suffering from the disease at the time of the marriage. But it would be difficult to ascertain whether a respondent was suffering from the disease at the time of the marriage and cases of confusion or victimization might arise. He did not believe that because of an accident of this terrible kind a man should have a decree of divorce granted against him.

The proposed amendment was defeated by 130 to 48.

INSANITY AND DIVORCE

Mr. TURTON moved to substitute seven years for five as the period after which the spouse of an insane person could sue for divorce. Commander AGNEW said few medical men would be prepared to say after five years that a person was incurably insane. In Western Australia and New Zealand the conditions on which relief from insanity was provided were stricter than those in the Bill.

Sir ARNOLD WILSON said the conditions in the Bill were that the patient must have been continuously under treatment for five years, and must after that be subjected to a medical examination which, in the opinion of the court, proved that he was incurably insane. Doctors would in future be increasingly reluctant to declare that a person was incurably of unsound mind. No person who would recover within seven years would be certified by a doctor as incurably insane in the fifth year. There were no sudden changes; it was a question of slow recovery.

Mr. BARR pointed out that in the Bill introduced in the House of Lords in regard to Scotland the period proposed was three years. Major NEVEN-SPENCE asked the House to consider the insane persons who broke down during childbirth, after a long period of infectious illness, or at the change of life. The excellence of these peoples' lives might have been a contributory cause, yet a long period of treatment was almost inevitable before they were restored to mental health. These cases were capable of being restored. Divorce on grounds of illness was contrary to medical opinion.

The period of five years was retained by 141 votes to 48.

Commander BOWER moved to omit Clause 3 (Definition of Insanity). Sir DONALD SOMERVELL said the clause merely defined what "care and treatment" meant. Paragraph (*b*) of the clause dealt with the small class of cases in which, for psychological reasons, the actual certification was lifted and the person became a voluntary patient. If they attempted to go out or if their relatives attempted to take them away they would be immediately certified again.

Mr. BELLENGER asked if the clause would cover the persons who entered an asylum as voluntary patients without previously having been certified. Sir DONALD SOMERVELL said he thought that class would also be covered, subject to the overriding consideration that the court had to be satisfied that such persons were incurably of unsound mind.

Commander BOWER withdrew his amendment. Examination of the Bill was adjourned till April 23.

Tuberculosis in Newfoundland

On April 13 Sir JOHN WARDLAW-MILNE asked the Secretary of State for Dominion Affairs how many deaths from tuber-

culosis had been recorded in Newfoundland in 1936, and how the figures compared with previous years. Mr. MALCOLM MACDONALD circulated the following tabular reply:

"Returns for deaths from tuberculosis in Newfoundland in 1936 are not yet complete, but in fifteen out of the eighteen registration districts deaths from this disease totalled 544. This gives a mortality rate of 1.9 per 1,000. The total number of deaths from tuberculosis and the mortality rates per 1,000 of the population in previous years were as follows:

Year	Deaths from Tuberculosis (all forms)	Mortality rate per thousand of the population
1925	592	2.3
1926	628	2.4
1927	604	2.3
1928	692	2.6
1929	614	2.3
1930	573	2.0
1931	553	1.9
1932	521	1.8
1933	526	1.8
1934	552	1.6
1935	550	2.0

Debate on Nutrition

On the motion that the House of Commons should go into Committee of Supply on the Civil Estimates on April 13 Mr. ROWSON drew attention to the question of malnutrition, which, he said, existed in various parts of the country in a greater or less degree. There were 4,500,000 people who did not spend more than 4s. per head per week on food. It was utterly impossible to provide a diet which was body-building and strengthening for a child, an adolescent, or an adult on such a figure. He was prepared to admit that sometimes malnutrition among miners was not altogether due to low wages. Malnutrition and a subnormal physical condition might be due to the speed at which they had to work and the heat they had to endure. In the case of mothers and children, especially pregnant mothers, it would be agreed that in the distressed areas there was a good deal of malnutrition. He hoped due notice would be taken of the suffering entailed in so many ways by women. The Minister of Health might do something to get the people to realize what was necessary in foodstuffs. He might also enter upon a poster campaign. That would be a good method of advertising the way in which the people might more profitably spend their money. A group of commodities might be shown and the calories, proteins, and vitamins contained in various foods. Something should also be done to organize the better feeding of children in the schools.

Mr. JAMES GRIFFITHS said that one of the best services which the Minister of Health could render would be to make representations to the Unemployment Assistance Board to increase their scales.

NUTRITION ADVISORY COMMITTEE'S REPORT

Sir KINGSLEY WOOD said he welcomed discussion because it gave him the opportunity to call attention to the publication of the first report of the Advisory Committee on Nutrition of the Ministry of Health. He considered that report to be the most valuable document on nutrition that we had had up to the present time. There could be no question as to the authority of the committee: the chairman was Lord Luke, and among the members were Mrs. Barton, Professor Cathcart, Professor Sir Gowland Hopkins, Professor Mellanby, and Sir John Orr. The report was unanimous. It served a very useful purpose at present in that during the last year or two the question of nutrition had not only been a subject of much discussion, but one on which all sorts of statements had been made as to the condition of the nation. Many people had been bewildered and confused by masses of assertions and advice, informed or otherwise. The Advisory Committee said that a great deal of further information had to be obtained before we could reach a final national policy on nutrition. The report was particularly valuable in that it pointed out a number of ways along which advances could be made. In considering nutrition we must have a right perspective in the sense that while this was an important side it was one side only of our national health problem. Man did not live by calories alone. The national health did not depend only on vitamins, but on better housing, the clearance of slums, maternity and child welfare, the provision of more open spaces, and physical recreation.

The Advisory Committee had shown how the consumption per head of most foodstuffs had increased since before the war, and gave the proportionate increases in condensed milk, fruit, butter, vegetables, eggs, tea, margarine, and cheese. It said that the consumption of butter and margarine together was now 50 per cent. higher than it was before the war, but on the other side the consumption of cereals had fallen by nearly 10 per cent. since 1913 and milk and cream by about 6 per cent. This increased consumption of foodstuffs was considered by the committee to be evidence of a continued improvement in the national dietary and a rise in the standard of living. The weakest thing to which the committee could point in connexion with the national dietary was the consumption of milk, which was on a very low level in this country.

INQUIRIES AND INVESTIGATIONS

The report called attention to two or three inquiries which ought to be made and pending which people ought to suspend judgement. The report was described as a preliminary survey of the whole field, and a further investigation into family budgets and matters of that kind was recommended. Accordingly the Minister had asked local authorities to review at an early date their arrangements under the Maternity and Child Welfare Acts for the supply of milk and other foods, in view of the importance of securing that the diet of expectant and nursing mothers should contain the proper constituents, and that the consumption of milk, especially by young people, should be increased. He had also drawn attention to the fact that there was to be no question of the limitations which had hitherto been in operation in some areas. He had said that he did not think it desirable to adopt any such restriction, for instance, as that the supply of milk to expectant mothers should be only during the last two or three months of pregnancy, or that children should be supplied with milk only up to the age of 18 months or 2 years, or that the limit of supply in every case should be one pint per day. Local authorities had also been asked to review the scale of income used in connexion with the payment for milk and other food supplied. He had added, as regards liquid milk, that wherever possible a supply of efficiently pasteurized milk should be provided and that where this was not practicable the medical officer of health should approve of the source and quality of the supply. Finally, they had been asked to consider afresh the question of a properly organized system of meals. As the block grants to local authorities had been raised by £5,000,000 to nearly £50,000,000 a year, and at any rate the rearranged distribution gave a larger share to the authorities whose need was greatest, these authorities would be able to continue and extend the work which they were doing in the direction indicated by the Advisory Committee.

Through the Ministry of Labour an inquiry was being made into family budgets to provide the material required for a revision of the basis of the cost-of-living index. This was going to be incorporated in the Ministry of Labour cost-of-living inquiry. The proposals would involve the collection of budgets from 10,000 families for one week, and from the large proportion of those families for three other weeks, and also supplementary budgets of personal expenditure from wage-earning members of the families. Certain dietary studies were also to be undertaken. Although there was much to be done, a great deal had been achieved in the direction of improving the health of the nation in the matter of nutrition. Since August, 1931, the biggest milk-in-schools scheme in the world had been started, and the Milk Marketing Board, in co-operation with local authorities and the Commissioner for the Special Areas, had devised schemes for the provision of

milk at a cheap rate for expectant and nursing mothers and for children not of school age. In 1931–2, so far as milk was concerned, about 16,472,000 meals were being provided. That figure in 1935–6 had reached 63,710,000. In 1931–2 the figure for free meals was 93,232, and last year it had risen to 406,341. The same proportion obtained for other meals.

DEFICIENCIES OF WHITE BREAD

Mr. TURTON said that the Advisory Committee had not dealt with that part of the report of the Technical Commission of the League of Nations which pointed out that white flour in the process of milling was deprived of important nutritive elements. This country was living on white bread, and all the beneficial properties of bread were being taken out in the process of milling and the country was being given something very bad for the nutrition of the nation. Other countries had taken drastic action to deal with this bread problem. Every year 36,000 people were dying of tuberculosis, and he attached considerable importance to the connexion between the bread we were consuming and the rate of tuberculosis mortality. In the North Riding they had tried to improve nutrition and lower the tuberculosis rate, and had been extremely successful. One of the ways in which the tuberculosis officers had dealt with the matter in the North Riding had been to give those suffering from tuberculosis a large proportion of bran in their diet. Surely the Advisory Committee should go into the question of the bread we consumed with great care. He had noticed in the country districts a gradual increase in the consumption of tinned food. He would like the Advisory Committee in their next investigation to inquire more fully into the value of tinned foods as opposed to fresh foods.

Mr. E. J. WILLIAMS said that Dr. Hastings had recently mentioned the time that was taken in inspecting school children under the school medical service. He was dealing with the London County Council schools. He said that six minutes was the time taken to examine a school child, and he complained that it was quite impossible to find out the flaws in a child's health in six minutes. The Minister should consult the President of the Board of Education to see whether something could not be done to give far more accurate information as to school children's state of health than we had at present. We did not really know the physical state of our school children, and with such inadequate medical examinations we could not hope to know it. The Minister should insist that the school medical service was treated in a far more scientific way than it was at present.

NUTRITION AND REHOUSING

Mr. A. V. ALEXANDER said that the policy which the Government had adopted was not touching the problem. In his book Dr. M'Gonigle had referred to the transfer of the working-class population from slum areas to housing estates. From this it was obvious that it was impossible to hope for a solution of the problem unless, with improved housing conditions and the rental charges involved, we increased the income of the individual holders, whether employed or not, in order that they might be able to obtain the minimum standard of nutrition. The Minister seemed to take pride in the fact that there was to be a further inquiry into family budgets. In the Sheffield inquiry, the Liverpool inquiry, the Manchester inquiry, the Salford inquiry, and the inquiry of the British Medical Association, we had an abundance of material for any necessary action. It was simply a long-drawn-out process of appointing inquiry after inquiry instead of doing what was essential, enabling the people, by improved wages, or by increased assistance, or by adequate scales for those who had recourse to public assistance, to be able at least to purchase the minimum standard of food required to set up a proper basis of nutrition. He hoped the Minister of Health had seen in the *Journal* of the Royal Statistical Society the paper by Mr. R. F. George, in which he had clearly proved the case that in settling the poverty line now it ought not to be done by the figures of the British Medical Association's scale of two or three years ago. It must be done by the present cost. Mr. George had worked out the cost on the basis of the British Medical Association's scale. In 1933 the cost for an adult meal on that scale was 5s. 11d. per week. On the cost-of-living index figure for July, 1936, that same diet would cost not 5s. 11d. but 6s. 9d., and if we examined the change in costs since July, 1936, then the cost on the B.M.A. scale would not be 5s. 11d. per week or 6s. 9d. but 7s. 3d.

Mr. R. S. HUDSON said he was told that in fact the time taken for the examination of school children was not six minutes. The examination of some of the children took a longer time and that of others less time, the average being six minutes, which was adequate for the purpose. Mr. Alexander had referred to the results, as Dr. M'Gonigle saw them, of the transfer of some people from slums to new housing estates. He (Mr. Hudson) did not know that that point would be raised, or he would have brought some extremely interesting results which had been obtained from investigations made by various local authorities into similar circumstances in their own areas. The general effect was that inquiries were made, on a much bigger scale than those of Dr. M'Gonigle, in Leeds, Manchester, and another large town, and it was found that precisely the opposite results had accrued from shifting the population—the mortality rate had gone down and the general health had enormously improved. It was clear that much bigger experiments in large towns such as Manchester and Leeds gave infinitely more valuable results than the very small experiment made by Dr. M'Gonigle. We could take it that the figures given by Dr. M'Gonigle were not followed in the rest of the country, but that, on the contrary, the universal experience had been that the people had materially benefited as the result of being shifted from the slums.

Factories Bill in Committee

On April 13 the Standing Committee of the House of Commons which is examining the Factories Bill considered Clause 54 (Lifting Excessive Weights). Mr. RHYS DAVIES moved to omit the words which restricted the clause to young persons. He said that if heavy weight lifting was injurious a restriction of the prohibition to young persons would leave untouched the majority of the accidents. Out of 1,055 weight-lifting accidents in a period of three months 1,000 were to adults. Mr. BANFIELD, supporting the amendment, said there was a high prevalence of hernia cases among bakers when sacks of flour, each weighing 280 lb., had to be lifted by adults. The millers reduced the weight to 140 lb., with a resulting almost total absence of hernia cases among operative bakers.

Mr. GEOFFREY LLOYD pointed out that the clause, besides prohibiting the lifting by young persons of loads so heavy as likely to cause injury, also provided that the Home Secretary could make special regulations prescribing maximum weights which might be lifted, carried, or moved by persons employed in factories. Subsection 2 of the clause thereby extended the provision to men, but there were powerful reasons why it was not wise to make a purely general provision when the actual circumstances were so complicated. Research had shown that it was not easy to say in general terms how much might safely be lifted. It was desirable to give additional protection to young persons owing to their physical immaturity and mental inexperience. Sir JOHN SIMON said there was at present no general provision in the Factory Code on this subject, but in the Children Act a clause stated that a child should not be employed to lift, carry, or move anything so heavy as to be likely to cause injury.

Mr. RHYS DAVIES withdrew the amendment and the clause was added to the Bill.

Clause 55 (Prohibition of Employment of Female Young Persons in Certain Processes) was also added to the Bill after withdrawal of amendments to extend this prohibition to the making of bricks and tiles, and to the employment of girls under 17 on power presses.

LEAD POISONING AND ABORTION

On Clause 56 (Prohibition of Employment of Women and Young Persons in Certain Processes Connected with Lead Manufacture) Sir ERNEST GRAHAM-LITTLE moved to leave out the limitation to women. He said the suggestion of a sex

proclivity towards lead poisoning rested on "half-baked physiology and wholly cooked statistics." The statistics which Miss Margaret Bondfield had quoted on the lead poisoning Bill had proved to be fallacious. The work on this subject which would be accepted in medical circles was that of Dr. Collis and Professor Greenwood, president of the Royal Statistical Society. Their books stated that there was no evidence to support the suggestion that women were more subject to lead poisoning than men, or the suggestion that the accidents which followed in childbirth and so on were due to any sex proclivity. The women concerned objected to this discrimination. The latest knowledge of medicine should be used in framing this Bill.

Mr. LLOYD said he realized there might be conflicting views in the medical profession on the susceptibility of women to lead poisoning, but it was not part of the Home Office case that there was greater susceptibility in the case of women. Apart from susceptibility the consequences to women were more serious, particularly in maternity. The Home Office was advised that this poisoning was liable to produce abortion. Sir Ernest Graham-Little said the mortality was not any higher as a result of maternal poisoning than as a result of paternal lead poisoning. Paternal plumbism would give rise to many miscarriages. The international labour conference had recommended that in view of the danger to maternity and the physical development of children, women, and young persons, women should be protected in this matter. The British Government had undertaken to give effect to that recommendation and could not accept the amendment without breach of international obligation.

Sir Ernest Graham-Little's amendment was negatived, as was also an amendment by Mr. Walker to include alloys containing more than 10 per cent. of lead, and the clause was added to the Bill.

Clause 57 (Provisions as to Employment of Women and Young Persons in Processes involving use of Lead Compounds) was also added to the Bill. Clause 58 (Power to make Special Regulations for Safety and Health) was also approved. Other administrative clauses were ordered to stand part of the Bill.

NOTIFICATION OF INDUSTRIAL DISEASES

On Clause 64 (Notification of Industrial Diseases) Mr. ELLIS SMITH moved to extend the clause to "any industrial disease to which the provisions of Section 43 of the Workmen's Compensation Act, 1925, apply, or silicosis." Mr. Smith said chemical processes which were being introduced into industry were reflecting themselves in increasing industrial diseases. He was particularly concerned about silicosis. He was convinced that they were not getting the best out of reports of the Medical Research Council in dealing with these questions. Sir ERNEST GRAHAM-LITTLE supported the amendment because the list of diseases which the Bill proposed should be notified to the Chief Inspector of Factories had been transcribed from Section 73 of the Act of 1901, although of the five diseases there included three were practically obsolete, and not one case per annum had occurred in the last ten years. Other diseases had come into prominence in the interval. The most fatal, cancer of the skin, was not mentioned at all.

Sir JOHN SIMON said the amendment raised the question whether the committee should strike the present list out of the Factory Act. Whether the list ought to be revised was another matter. The list of diseases scheduled in the Workmen's Compensation Act differed from the list of diseases notifiable under the Factory Act, and the purposes of the two lists was not the same. The object of the list in the Compensation Act was to enable workmen to claim compensation, and of the list in the Factory Act to secure prevention. In considering whether a disease should be notifiable under the Factory Act the question was whether the information would be of value to the Factory Department in its effort to prevent the danger. Diagnosis of silicosis was a matter for experts, and to impose the duty of notification on the general practitioner would be an inappropriate method of obtaining information which was wanted on the incidence of the disease. To obtain that information the Department conducted special inquiries in industries where there was reason to suspect silicosis, such as industries connected with quarrying and various aspects of mining. A committee of the Medical Research Council had been appointed to continue investigations into industrial pulmonary disease, which included aspects of silicosis, and the Home Office arranged to obtain information from the Silicosis Medical Board on cases that came to its notice. He was sure the way in which they were proceeding was the better way, and he could not consent to substitute in the clause the Workmen's Compensation Act list for the Factory Act list.

The amendment was withdrawn.

MEDICAL REPRESENTATION AT INQUESTS

Clause 65 (Inquest in Case of Death by Accident or Industrial Disease in Factory) was next discussed. Mr. MANDER said he wished to permit interested parties to be represented by a medical practitioner, so that where a coroner directed a post-mortem examination in an inquest under the clause the actual examination would be carried out by a specialist used to dealing with cases of that kind. This matter was the subject of a recommendation in the report of the Departmental Committee on Coroners. Mr. GEOFFREY LLOYD said the question raised concerned the representation of two varying interests by medical practitioners at post-mortem examination. He read the observations of the Departmental Committee on the matter and suggested that it should be left to be dealt with by further legislation, when it could be looked at as a whole and in perspective. It was undesirable to deal with post-mortem procedure in this Bill.

Clause 65 was approved and Clause 66 (Power to Direct Formal Investigation of Accidents in Cases of Disease) was also added to the Bill. On Clause 67 (Duty of Examining Surgeon to Investigate and Report in Certain Cases) Mr. LLOYD said he was informed that the certifying surgeons preferred the term "examining surgeons," and as it was examination rather than certification which was the essential part of their work, it was decided to change the designation. The clause was approved.

On Clause 68 (General Conditions as to Hours of Employment of Women and Young Persons) Mr. RIDLEY moved to insert a provision forbidding employment of a young person under the age of 15 in a factory, and a long discussion followed. Sir ERNEST GRAHAM-LITTLE said the nation was going to be faced with a diminution of the number of children in the country, the most important capital that the nation could have. There were other ways than employment in factories for filling the gap between the elementary schools and the age of 15. The committee adjourned until April 15, when the discussion of age of entry into factories was resumed. Mr. Ridley's amendment was eventually defeated by 32 to 22. A discussion followed on another amendment by Mr. Ridley to make of general application the conditions laid down for women and young persons in Clause 68 in respect of hours worked, periods of employment, and intervals for meals and rest. The amendment was defeated by 29 to 16, and the committee adjourned until April 20.

Replying on March 15 to Mr. Wilfred Paling Sir JOHN SIMON said he hoped it would be possible to deal in the Factories Bill with the hours of young persons employed in connexion with factories, docks, and warehouses whose inclusion in the new Factory Code was recommended by the committee on hours of employment of young persons in unregulated trades. As regards other classes of young persons in whose case the committee suggested an extension of the Shops Act, 1934, it would be necessary to introduce separate legislation, which could not be undertaken during the present session.

Manchester Hospital and Proposed Employment Exchange

On April 15 Mr. FLEMING, Mr. ELLIS SMITH, Mr. WEDGEWOOD BENN, and Mr. EMERY asked whether the Minister of Labour had considered the objections to the erection of an employment exchange adjoining the central branch of the Manchester Royal Infirmary. Mr. Emery suggested that the building of this exchange would cause the closing down of the hospital branch for in-patients.

Mr. ERNEST BROWN said he was consulting the First Commissioner of works about proposals made to him informally

on behalf of the board of the Manchester Royal Infirmary. Until the inquiries were complete he could make no statement. He was aware that the medical profession in Manchester objected that the proposed building would obstruct the work that was carried on in the central branch of the Infirmary. At the request of the representative of the Infirmary he had seen him privately, and was securing consideration for the matter.

Mr. ELLIS SMITH suggested that the Government should take over the site of the Infirmary and make suitable compensation. Mr. BROWN said he preferred to make no statement on that at the moment. He could not say whether some proportion of the additional cost incurred by the hospital authorities in removing the branch would be repaid to them.

Sir KINGSLEY WOOD, answering Mr. Ellis Smith on the same subject, said he had received representations from the hospital on the proposed erection of the central employment exchange, but he had no powers in the matter. When in Manchester recently he had seen the site and the officials.

Corporal Punishment of Juveniles

Sir JOHN SIMON told Mr. Muff on April 15 that names were under consideration for service on the committee to inquire into the administration of corporal punishment for juvenile delinquents. The scope of the committee's inquiry would cover also the question of corporal punishment imposed on adults, whether by sentence of the criminal courts or by the prison authorities as part of the system of prison discipline.

Coroners' Comments

Lord MORRIS, in the House of Lords on April 15, asked whether the Government was prepared to curb by legislation the tendency among coroners to moralize and lecture at the inquests over which they presided, or, alternatively, to abolish the office of coroner. He said the matter had been before a Commission of Inquiry in 1935. The coroner's inquest was unnecessary, and a growing volume of opinion favoured its abolition.

Lord DUFFERIN, for the Government, said the Home Office knew of no increasing tendency of coroners to moralize and lecture. There were 3,500 inquests yearly in London, and he knew of no complaint against a coroner's conduct at any during the last year. The Home Office took a grave view of reflections on people who were not represented in court or at institutions which had not counsel to represent them. A circular to that effect had been issued to all coroners by the Home Office in 1927, and the subsequent recommendations of Lord Wright's committee were brought to their notice. Lord Wright's committee had said that on that particular point no legislation was required, but when opportunity offered the suggestions of that committee would probably be the subject of legislation. The Government, however, could not contemplate the abolition of the office of coroner.

Welfare of Crews of Merchant Ships.—Mr. RUNCIMAN, replying to a question on April 13, said that the recommendations of the Shipping Federation Committee for the welfare and comfort of the crews on merchant ships were now being generally adopted by shipbuilders and owners, and were substantially incorporated in a revision of the Board of Trade Instructions to their Surveyors, which was now under consideration by the Merchant Shipping Advisory Committee.

Approved Societies and Unemployed on Extended Insurance.—An April 13 Mr. JOHNSTON asked the Minister of Health whether he was aware of the administrative difficulties of many national health approved societies which had a large proportion of unemployed members on the extended insurance period and for whom these societies only received half the administration allowance; and whether he could make any announcements supplementing that allowance. Mr. ROBERT HUDSON said that the Minister had considered the representations made to him on the subject and had found it possible for the allowance to be increased by 50 per cent. as from the beginning of the present year.

Medical News

The ninety-seventh half-yearly dinner of the Aberdeen University Club, London, will be held at the Café Royal, Regent Street, W., on Thursday, April 29, at 7 for 7.30 p.m., followed by dancing from about 9.45 until midnight. The chairman of the evening will be Sir Peter Chalmers Mitchell, C.B.E., LL.D., F.R.S., and the chief guest will be Sir Benjamin Robertson K.C.S.I., K.C.M.G., LL.D. The honorary secretary's address is 51, Harley Street, London, W.1.

A lecture on "Hypnosis, Suggestibility, and Progressive Relaxation: An Experimental Study" will be delivered by Dr. William Brown before the British Psychological Society at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C., on Thursday, April 29, at 8.30 p.m.

The committee entrusted with the arrangements for a memorial to the late Dr. Carey Coombs, in conjunction with the Bristol Medico-Chirurgical Society, has arranged with Mr. Laurence O'Shaughnessy, F.R.C.S., to deliver a lecture on "The Operative Treatment of Cardiac Ischaemia." This will be given at 8.30 p.m. on Wednesday, May 5, in the Physiological Lecture Theatre of Bristol University.

A new wing at the City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E., will be opened by Queen Mary on April 29. An appeal for £25,000 has been made for the provision of the new wing, and Queen Mary has consented to receive at the opening ceremony purses given towards this sum.

The Lord Mayor of London and the Lady Mayoress have issued invitations to a festival dinner for the National Hospital for Diseases of the Nervous System, Queen Square, to be held at the Mansion House on Tuesday, April 27, when H.R.H. the Duke of Kent will be present.

A meeting of the Medical Section of the British Psychological Society will be held at 11, Chandos Street, Cavendish Square, W., on Wednesday, April 28, at 8.30 p.m., when Dr. Jane Suttie will read a paper on "Biological Echoes in Clinical Psychotherapy." A discussion will follow.

A quarterly court of the directors of the Society for Relief of Widows and Orphans of Medical Men was held on April 7, with Dr. C. Kempster, vice-president, in the chair. The deaths of three members were reported, and five new members were elected. A donation of £111 has been received from the Bovril Medical Agency. A first application for relief was received from a widow of a member. The court voted her a yearly grant of £50 from the ordinary funds and one of £25 from the Brickwell Fund. The number of widows in receipt of relief has now reached a total of sixty, which is the largest number to be dependent on the society at any one time. One of these widows celebrated her ninetieth birthday in March. She has been on the funds for forty-one years, and has received over £3,000 from the society. This is but one of many examples of the benefit that may be obtained by membership. Relief is only given to the widows or orphans of deceased members. £866 has been received from the Inland Revenue, representing the return of income tax for the year ended April 5. The annual general meeting of the society will be held on May 19, at 5 p.m. Membership is open to any registered medical man who at the time of his election is resident within a twenty-mile radius of Charing Cross. Full particulars may be obtained from the secretary at the offices of the society, 11, Chandos Street, Cavendish Square, W.1.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

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QUERIES AND ANSWERS

Sleep Rolling

Dr. H. STIVEN (Cairo), in reply to "J. M. C." (*Journal*, March 27, p. 694), writes: Try Coué's method of talking quietly to the child, loud enough for the subconscious mind to hear, but not loud enough to wake the child. Tell him to keep still, over and over again, about twenty to forty times each night, and in two or three nights the habit will be cured.

Ownership of a Medal

Mr. T. A. ANDERSON (Central High School, Beaufort West, S. Africa) writes: With reference to the inquiry by Dr. Norman Klass in your issue of November 21, 1936 (p. 1066) about the bronze medal picked up in this district, you may be interested to hear that I have succeeded in tracing a daughter of the late Dr. L. J. Newnham in this country, and have now restored the medal. Her father came out to practise in South Africa, at one time at Malmesbury, later farther inland. He died in 1918 at the age of 67. The medal must have lain for years on the veld. I have not yet succeeded in accounting for its presence in these parts. Charing Cross Hospital may be interested in the above information.

External Use of Iodine

Colonel R. J. BLACKHAM (London, E.C.4) writes: As author of a first-aid manual which has passed through very many editions, and is still used for ambulance classes in India, I have been particularly interested in the correspondence opened by Dr. J. C. Macaulay in the *Journal* of February 13 (p. 374). Dr. Macaulay has been at pains to point out that he did not mean to convey in his first letter that iodine was useless, but that it does not suit some cases; but some writers who have followed him have been unequivocal in their complete condemnation. The use of iodine, known for so many years as "the surgeon's wooden sword," as a skin antiseptic is very well established, but I think all recognize that the drug is an irritant—in fact, much of its value is due to this fact. Hale-White, in the book which has served so many generations of students, says it is a "disinfectant and irritant," so Dr. Macaulay has only called attention to a quality of iodine which has been drummed into his pupils by every professor of pharmacology. This is agreed, but when it is suggested that the action of the drug is superficial your correspondents are on debatable ground, since authorities such as Cushny contend that "it penetrates into the deeper layers of the skin." The most recent books on surgery continue to advise an alcoholic solution of iodine in preparation of the skin for operations. For instance, Rowlands and Turner speak of "the remarkable power which the solution possesses of destroying the cutaneous organisms" (1936, eighth edition, p. 18). Again, Rose and Carless's *Manual of Surgery*, another students' "bible," with regard to skin preparation for operations, says: "A 2 per cent. solution of iodine in 95 per cent. of alcohol is . . . painted over it [the skin] and allowed to dry and a sterile dressing applied. The painting with iodine is repeated once again at the time of the operation." I fully endorse the views of those correspondents who have emphasized the value of spirit and friar's balsam for the first-aid treatment of wounds, but I think they are inferior to iodine. I would like to call attention to the difficulties in carrying liquids when travelling. It is always the iodine bottle which gets broken, and I have suffered much loss from such breakages. For some years past I have always carried unguentum iodi tinctum, or rather a proprietary article of the same class. I have found this preparation entirely satisfactory for first-aid treatment of wounds and abrasions, and the iodine which it contains certainly does penetrate.

Income Tax

Deduction for Rent

"J. S." has for some years been allowed a deduction of £22 a year—that is, one-half of £44, the amount of rent payable before he bought the property. The inspector of taxes states that the deduction should have been one-half of £34—that is, £17—as £34 is the amount of the net Schedule A Assessment.

*** The inspector is correct: where property is owned the "rent" should be reckoned for that purpose at the amount of the net Schedule A assessment. But "J. S." is entitled in addition to deduct the amount of any expenditure on repair or decoration of that part of the premises which is used for professional purposes.

LETTERS, NOTES, ETC.

Herpes Zoster and Varicella

Dr. F. A. E. SILCOCK (Leicester) writes: I was much interested in the report of another case of herpes zoster and varicella by Dr. J. G. Bennett in your issue of April 3 (p. 738), as I published a case of "Herpes Zoster Brachialis with Concurrent Varicelliform Eruption," together with two photographs of the case and a few references to the literature, in the *British Medical Journal* of July 22nd, 1933. My case, however, was in a man aged 74 years. Following my communication there were several others who wrote and described the coincidence of the two conditions.

Vincent's Angina

Dr. EUSTACE THORP (Sunderland) writes: I have been seeing lately quite a number of cases of Vincent's angina, all of which have been bacteriologically confirmed, and nearly all have been bilateral. This would seem to discount the general opinion that the disease is characterized by being unilateral.

Iodine in Pulmonary Tuberculosis

Dr. W. O. C. HUNT writes: Recently I have been treating cases of pulmonary tuberculosis with graduated doses of tr. iodine, giving as a maximum 5 minims three times a day. The results have been amazingly good. In a busy general practice the opportunity for studying these results are not so good. I wonder if some one in a suitable place for observation would give this treatment a trial.

Protamine Zinc Insulin

We have received from Messrs. Boots a copy of their new booklet on protamine insulin (with zinc) suspension. This gives details of standardization and testing, together with clinical results, the dosage for new and old cases of diabetes, and particulars of the modified diet which should be used when changing over to the new treatment. The booklet concludes with a useful list of references to recent papers. Copies may be had on application to the Wholesale and Export Department, Boots Pure Drug Co. Ltd., Station Street, Nottingham.

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